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Suzanne K. Ramsay
Ian S. McLean
Hideki Takami
Editors

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Contents

Part One

lxiii	<i>Conference Committee</i>
lxv	<i>Introduction</i>

SESSION 1 INSTRUMENT PROGRAMS AT MAJOR OBSERVATORIES

9147 02	Instrumentation at Gemini Observatory (Invited Paper) [9147-1] S. J. Kleinman, M. Boccas, S. J. Goodsell, P. Gomez, R. Murowinski, A.-N. Chené, D. Henderson, Gemini Observatory (United States)
9147 03	New developments in instrumentation at the W. M. Keck Observatory (Invited Paper) [9147-2] S. M. Adkins, T. E. Armandroff, W. M. Keck Observatory (United States); M. P. Fitzgerald, Univ. of California, Los Angeles (United States); J. Johnson, W. M. Keck Observatory (United States); J. E. Larkin, Univ. of California, Los Angeles (United States); H. A. Lewis, W. M. Keck Observatory (United States); C. Martin, California Institute of Technology (United States); K. Y. Matthews, Univ. of California, Los Angeles (United States); J. X. Prochaska, Univ. of California, Santa Cruz (United States); P. Wizinowich, W. M. Keck Observatory (United States)
9147 04	Paranal instrumentation programme (Invited Paper) [9147-3] L. Pasquini, M. Casali, A. Russel, European Southern Observatory (Germany)
9147 05	An overview and the current status of instrumentation at the Large Binocular Telescope Observatory (Invited Paper) [9147-4] R. M. Wagner, M. L. Edwards, O. Kuhn, D. Thompson, C. Veillet, Large Binocular Telescope Observatory (United States)
9147 06	SOFIA science instruments: commissioning, upgrades and future opportunities [9147-5] E. C. Smith, NASA Ames Research Ctr. (United States); J. W. Miles, L. Helton, R. Sankrit, B. G. Andersson, E. E. Becklin, J. M. De Buizer, Universities Space Research Association (United States); C. D. Dowell, Jet Propulsion Lab. (United States); E. W. Dunham, Lowell Observatory (United States); R. Güsten, Max-Planck-Institut für Radioastronomie (Germany); D. A. Harper, The Univ. of Chicago (United States); T. L. Herter, Cornell Univ. (United States); L. D. Keller, Ithaca College (United States); R. Klein, Universities Space Research Association (United States); A. Krabbe, Univ. Stuttgart (Germany); S. Logsdon, Univ. of California, Los Angeles (United States); P. M. Marcum, NASA Ames Research Ctr. (United States); I. S. McLean, Univ. of California, Los Angeles (United States); W. T. Reach, Universities Space Research Association (United States); M. J. Richter, Univ. of California, Davis (United States); T. L. Roellig, NASA Ames Research Ctr. (United States); G. Sandell, M. L. Savage, Universities Space Research Association (United States); P. Temi, NASA Ames Research Ctr. (United States); W. D. Vacca, J. E. Vaillancourt, J. E. Van Cleve, E. T. Young, Universities Space Research Association (United States)

- 9147 07 **The Daniel K. Inouye Solar Telescope first light instruments and critical science plan** [9147-6]
D. F. Elmore, T. Rimmele, National Solar Observatory (United States); R. Casini, National Ctr. for Atmospheric Research (United States); S. Hegwer, National Solar Observatory (United States); J. Kuhn, H. Lin, Institute for Astronomy, Univ. of Hawai'i (United States); J. P. McMullin, K. Reardon, National Solar Observatory (United States); W. Schmidt, Kiepenheuer-Institut für Sonnenphysik (Germany); A. Tritschler, F. Wöger, National Solar Observatory (United States)

SESSION 2 NEW INSTRUMENTS AND UPGRADES TO EXISTING INSTRUMENTS

- 9147 09 **Introducing CUBES: the Cassegrain U-band Brazil-ESO spectrograph** [9147-8]
P. Bristow, European Southern Observatory (Germany); B. Barbuy, Univ. de São Paulo (Brazil); V. B. Macanhan, B. Castilho, Lab. Nacional de Astrofísica (Brazil); H. Dekker, B. Delabre, European Southern Observatory (Germany); M. Diaz, Univ. de São Paulo (Brazil); C. Gneiding, Lab. Nacional de Astrofísica (Brazil); F. Kerber, H. Kuntschner, European Southern Observatory (Germany); G. La Mura, Univ. degli Studi di Padova (Italy); R. Reiss, J. Vernet, European Southern Observatory (Germany)
- 9147 0A **LRS2: the new facility low resolution integral field spectrograph for the Hobby-Eberly telescope** [9147-9]
T. S. Chonis, G. J. Hill, H. Lee, S. E. Tuttle, B. L. Vattiat, The Univ. of Texas at Austin (United States)
- 9147 0B **Project status of the Robert Stobie spectrograph near infrared instrument (RSS-NIR) for SALT** [9147-10]
M. J. Wolf, M. P. Mulligan, M. P. Smith, D. P. Adler, C. M. Bartosz, M. A. Bershad, Univ. of Wisconsin-Madison (United States); D. A. H. Buckley, South African Astronomical Observatory (South Africa); M. P. Burse, P. A. Chordia, Inter-Univ. Ctr. for Astronomy and Astrophysics (India); J. C. Clemens, The Univ. of North Carolina at Chapel Hill (United States); H. W. Epps, Lick Observatory, Univ. of California, Santa Cruz (United States); K. Garot, B. L. Indahl, K. P. Jaehnig, Univ. of Wisconsin-Madison (United States); R. J. Koch, Diron Technologies, Inc. (United States); W. P. Mason, G. Mosby Jr., K. H. Nordsieck, J. W. Percival, Univ. of Wisconsin-Madison (United States); S. Punjabi, A. N. Ramaprakash, Inter-Univ. Ctr. for Astronomy and Astrophysics (India); J. A. Schier, The Pilot Group (United States); A. I. Sheinis, Australian Astronomical Observatory (Australia); S. A. Smee, Johns Hopkins Univ. (United States); D. J. Thielman, M. W. Werner, Univ. of Wisconsin-Madison (United States); T. B. Williams, South African Astronomical Observatory (South Africa); J. P. Wong, Paradigm Design Inc. (United States)
- 9147 0C **VISIR upgrade overview and status** [9147-11]
F. Kerber, H. Käufel, European Southern Observatory (Germany); P. Baksai, European Southern Observatory (Chile); N. Di Lieto, D. Dobrzycka, P. Duhoux, G. Finger, European Southern Observatory (Germany); S. Heikamp, Leiden Observatory (Netherlands); D. Ives, G. Jakob, L. Lundin, European Southern Observatory (Germany); D. Mawet, European Southern Observatory (Chile); L. Mehrgan, European Southern Observatory (Germany); Y. Momany, European Southern Observatory (Chile); V. Moreau, E. Pantin, CEA-Ctr. de SACLAY (France); M. Riquelme, European Southern Observatory (Chile); S. Sandrock, R. Siebenmorgen, A. Smette, J. Taylor, M. van den Ancker, European Southern Observatory (Germany); G. Valdes, European Southern Observatory (Chile); L. Venema, ASTRON (Netherlands); U. Weilenmann, European Southern Observatory (Chile)

- 9147 0D **The camera of the ASTRI SST-2M prototype for the Cherenkov Telescope Array** [9147-12]
O. Catalano, M. C. Maccarone, C. Gargano, G. La Rosa, A. Segreto, G. Sottile,
INAF - Istituto di Astrofisica Spaziale e Fisica Cosmica di Palermo (Italy); V. De Caprio,
INAF - Osservatorio Astronomico di Capodimonte (Italy); F. Russo, M. Capalbi, P. Sangiorgi,
INAF - Istituto di Astrofisica Spaziale e Fisica Cosmica di Palermo (Italy); G. Bonanno,
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Catania (Italy); L. Stringhetti, M. Fiorini, N. La Palombara, S. Incorvaia, G. Toso, INAF - IASF
Milano (Italy); D. Impiombato, S. Giarrusso, INAF - Istituto di Astrofisica Spaziale e Fisica
Cosmica di Palermo (Italy)
- 9147 0E **A two-dimensional spectropolarimeter as a first-light instrument for the Daniel K. Inouye
Solar Telescope** [9147-13]
W. Schmidt, A. Bell, C. Halbgewachs, F. Heidecke, T. J. Kentischer, O. von der Lhe,
T. Scheiffelen, M. Sigwarth, Kiepenheuer-Institut fr Sonnenphysik (Germany)
- 9147 0F **Performance of polarization modulation and calibration optics for the Daniel K. Inouye
Solar Telescope** [9147-14]
D. F. Elmore, National Solar Observatory (United States); S. R. Sueoka, College of Optical
Sciences, The Univ. of Arizona (United States); R. Casini, National Ctr. for Atmospheric
Research (United States)
- 9147 0G **KIDSpec: an MKID based medium resolution integral field spectrograph** [9147-332]
K. O'Brien, N. Thatte, Univ. of Oxford (United Kingdom); B. Mazin, Univ. of California, Santa
Barbara (United States)
- 9147 0H **HIPO in-flight performance improvements** [9147-16]
E. W. Dunham, T. A. Bida, P. L. Collins, G. Mandushev, S. Zoonematkermani, Lowell
Observatory (United States); J. Van Cleve, Universities Space Research Association (United
States); D. Angerhausen, Rensselaer Polytechnic Institute (United States); A. Mandell, NASA
Goddard Space Flight Ctr. (United States)
- 9147 0J **A near-infrared SETI experiment: instrument overview** [9147-18]
S. A. Wright, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada)
and Univ. of Toronto (Canada); D. Werthimer, Univ. of California, Berkeley (United States);
R. R. Treffers, Starman Systems, LLC (United States); J. Maire, Dunlap Institute for Astronomy
and Astrophysics, Univ. of Toronto (Canada); G. W. Marcy, Univ. of California, Berkeley
(United States); R. P. S. Stone, Lick Observatory, Univ. of California, Santa Cruz (United
States); F. Drake, SETI Institute (United States); E. Meyer, P. Dorval, Univ. of Toronto
(Canada); A. Siemion, Univ. of California, Berkeley (United States)

SESSION 3 HIGH MULTIPLEX AND SURVEY INSTRUMENTS I

- 9147 0L **Project overview and update on WEAVE: the next generation wide-field spectroscopy
facility for the William Herschel Telescope** [9147-20]
G. Dalton, STFC Rutherford Appleton Lab. (United Kingdom) and Univ. of Oxford (United
Kingdom); S. Trager, Univ. of Groningen (Netherlands); D. C. Abrams, Isaac Newton Group
of Telescopes (Spain); P. Bonifacio, GEPI, Observatoire de Paris Meudon (France);
J. A. L. Aguerri, Instituto de Astrofsica de Canarias (Spain); K. Middleton, STFC Rutherford
Appleton Lab. (United Kingdom); C. Benn, K. Dee, Isaac Newton Group of Telescopes
(Spain); F. Sayde, GEPI, Observatoire de Paris Meudon (France); I. Lewis, Univ. of Oxford
(United Kingdom); J. Pragt, NOVA ASTRON (Netherlands); S. Pico, Isaac Newton Group of

Telescopes (Spain); N. Walton, Institute of Astronomy, Univ. of Cambridge (United Kingdom); J. Rey, Isaac Newton Group of Telescopes (Spain); C. Allende Prieto, J. Peñate, Instituto de Astrofísica de Canarias (Spain); E. Lhome, Isaac Newton Group of Telescopes (Spain); T. Agócs, NOVA ASTRON (Netherlands); J. Alonso, Instituto de Astrofísica de Canarias (Spain); D. Terrett, STFC Rutherford Appleton Lab. (United Kingdom); M. Brock, J. Gilbert, Univ. of Oxford (United Kingdom); A. Ridings, Isaac Newton Group of Telescopes (Spain); I. Guinouard, GEPI, Observatoire de Paris à Meudon (France); M. Verheijen, Univ. of Groningen (Netherlands); I. Tosh, K. Rogers, STFC Rutherford Appleton Lab. (United Kingdom); I. Steele, Liverpool John Moores Univ. (United Kingdom); R. Stuik, N. Tromp, NOVA ASTRON (Netherlands); A. Jasko, Konkoly Observatory (Hungary); J. Kragt, D. Lesman, NOVA ASTRON (Netherlands); C. Mottram, S. Bates, Liverpool John Moores Univ. (United Kingdom); F. Gribbin, Isaac Newton Group of Telescopes (Spain); L. F. Rodriguez, J. M. Delgado, Instituto de Astrofísica de Canarias (Spain); C. Martin, D. Cano, Isaac Newton Group of Telescopes (Spain); R. Navarro, NOVA ASTRON (Netherlands); M. Irwin, J. Lewis, E. Gonzalez Solares, Institute of Astronomy, Univ. of Cambridge (United Kingdom); N. O'Mahony, Isaac Newton Group of Telescopes (Spain); A. Bianco, INAF - Osservatorio Astronomico di Brera (Italy); C. Zurita, Instituto de Astrofísica de Canarias (Spain); R. ter Horst, NOVA ASTRON (Netherlands); E. Molinari, M. Lodi, J. Guerra, INAF - Fundación Galileo Galilei (Spain); A. Vallenari, A. Baruffolo, INAF - Osservatorio Astronomico di Padova (Italy)

9147 OM

4MOST: 4-metre Multi-Object Spectroscopic Telescope [9147-21]

R. S. de Jong, S. Barden, O. Bellido-Tirado, J. Brynnel, C. Chiappini, É. Depagne, R. Haynes, D. Johl, D. P. Phillips, O. Schnurr, A. D. Schwöpe, J. Walcher, S. M. Bauer, G. Cescutti, M. R. Cioni, F. Dionies, H. Enke, Leibniz-Institut für Astrophysik Potsdam (Germany); D. Haynes, Leibniz-Institut für Astrophysik Potsdam (Germany) and InnoFSPEC (Germany); A. Kelz, F. S. Kitaura, G. Lamer, I. Minchev, V. Müller, S. E. Nuza, Leibniz-Institut für Astrophysik Potsdam (Germany); J.-C. Olaya, Leibniz-Institut für Astrophysik Potsdam (Germany) and InnoFSPEC (Germany); T. Piffl, E. Popow, A. Saviauk, M. Steinmetz, U. Ural, M. Valentini, R. Winkler, L. Wisotzki, Leibniz-Institut für Astrophysik Potsdam (Germany); W. R. Ansorge, RAMS-CON Management Consultants (Germany); M. Banerji, E. Gonzalez Solares, M. Irwin, R. C. Kennicutt Jr., D. P. King, R. McMahon, S. Koposov, I. R. Parry, X. Sun, N. A. Walton, Univ. of Cambridge (United Kingdom); G. Finger, O. Iwert, M. Krumpe, J.-L. Lizon, V. Mainieri, European Southern Observatory (Germany); J.-P. Amans, P. Bonifacio, M. Cohen, P. François, P. Jagourel, S. B. Mignot, F. Royer, P. Sartoretti, GEPI, Observatoire de Paris à Meudon, CNRS, Univ. Paris Diderot (France); R. Bender, H.-J. Hess, F. Lang-Bardl, B. Muschelok, J. Schlichter, Univ.-Sternwarte München (Germany); H. Böhringer, T. Boller, A. Bongiorno, M. Brusa, T. Dwelly, A. Merloni, K. Nandra, M. Salvato, Max-Planck-Institut für extraterrestrische Physik (Germany); J. H. Pragt, R. Navarro, G. Gerlofsma, R. Roelfsema, NOVA ASTRON (Netherlands); G. B. Dalton, Rutherford Appleton Lab. (United Kingdom) and Univ. of Oxford (United Kingdom); K. F. Middleton, I. A. Tosh, Rutherford Appleton Lab. (United Kingdom); C. Boeche, E. Caffau, N. Christlieb, E. K. Grebel, C. J. Hansen, A. Koch, H.-G. Ludwig, H. Mandel, A. Quirrenbach, L. Sbordone, W. Seifert, G. Thimm, Zentrum für Astronomie der Univ. Heidelberg (Germany); A. Helmi, S. C. trager, Kapteyn Astronomical Institute (Netherlands); T. Bensby, S. Feltzing, G. Ruchti, Lund Univ. (Sweden); B. Edvardsson, A. Korn, K. Lind, Uppsala Univ. (Sweden); W. Boland, NOVA (Netherlands); M. Colless, Australian Astronomical Observatory (Australia) and Australian National Univ. (Australia); G. Frost, J. Gilbert, P. Gillingham, J. Lawrence, N. Legg, W. Saunders, A. Sheinis, Australian Astronomical Observatory (Australia); S. Driver, A. Robotham, Univ. of Western Australia (Australia); R. Bacon, P. Caillier, J. Kosmalski, F. Laurent, J. Richard, Ctr. de Recherche Astrophysique de Lyon (France)

MOONS: the Multi-Object Optical and Near-infrared Spectrograph for the VLT [9147-22]

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9147 00

MEGARA: a new generation optical spectrograph for GTC [9147-23]

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SESSION 4 HIGH MULTIPLEX AND SURVEY INSTRUMENTS II

- 9147 OP **The WIYN one degree imager 2014: performance of the partially populated focal plane and instrument upgrade path** [9147-24]
D. R. Harbeck, WIYN Observatory (United States); T. Boroson, National Optical Astronomy Observatory (United States) and Las Cumbres Observatory Global Telescope Network (United States); M. Lesser, The Univ. of Arizona (United States); J. Rajagopal, National Optical Astronomy Observatory (United States); A. Yeatts, WIYN Observatory (United States); C. Corson, National Optical Astronomy Observatory (United States); W. Liu, WIYN Observatory (United States); I. Dell'Antonio, Brown Univ. (United States); R. Kotulla, Univ. of Wisconsin-Milwaukee (United States) and Univ. of Wisconsin-Madison (United States); D. Ouellette, The Univ. of Arizona (United States); E. Hooper, WIYN Observatory (United States) and Univ. of Wisconsin-Madison (United States); M. Smith, Univ. of Wisconsin-Madison (United States); R. Bredthauer, Semiconductor Technology Associates, Inc. (United States); P. Martin, Univ. of Hawai'i at Hilo (United States); G. Muller, GMTO Corp. (United States); P. Knezek, National Science Foundation (United States); M. Hunten, Lunar and Planetary Science Lab. (United States)
- 9147 OQ **VIRUS: production and deployment of a massively replicated fiber integral field spectrograph for the upgraded Hobby-Eberly Telescope** [9147-25]
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9147 OR **The construction, alignment, and installation of the VIRUS spectrograph** [9147-26]
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9147 OS **The Dark Energy Spectroscopic Instrument (DESI)** [9147-27]
B. Flaugher, Fermi National Accelerator Lab. (United States); C. Bebek, Lawrence Berkeley National Lab. (United States)

9147 OT **Progress with the Prime Focus Spectrograph for the Subaru Telescope: a massively multiplexed optical and near-infrared fiber spectrograph** [9147-28]
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- 9147 OU **Results of the verification of the NIR MOS EMIR [9147-29]**
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- 9147 OV **DOTIFS: a new multi-IFU optical spectrograph for the 3.6-m Devasthal optical telescope [9147-270]**
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- 9147 OW **Performance of the K-band multi-object spectrograph (KMOS) on the ESO VLT [9147-31]**
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9147 OX **Demonstration of high-performance cryogenic probe arms for deployable IFUs [9147-32]**

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9147 OY **First light results from the Hermes spectrograph at the AAT [9147-33]**

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SESSION 5 HIGH MULTIPLEX AND SURVEY INSTRUMENTS III

9147 OZ **KOSMOS and COSMOS: new facility instruments for the NOAO 4-meter telescopes [9147-34]**

P. Martini, The Ohio State Univ. (United States); J. Elias, National Optical Astronomy Observatory (United States); S. Points, Cerro Tololo Inter-American Observatory (Chile); D. Sprayberry, National Optical Astronomy Observatory (United States); M. A. Derwent, R. Gonzalez, J. A. Mason, T. P. O'Brien, D. P. Pappalardo, R. W. Pogge, The Ohio State Univ. (United States); R. Stoll, The Ohio State Univ. (United States) and Yale Univ. (United States);

R. Zhelem, The Ohio State Univ (United States) and Australian Astronomical Observatory (Australia); P. Daly, M. Fitzpatrick, J. R. George, National Optical Astronomy Observatory (United States); M. Hunten, National Optical Astronomy Observatory (United States) and The Univ. of Arizona (United States); R. Marshall, G. Poczul, S. Rath, R. Seaman, National Optical Astronomy Observatory (United States); M. Trueblood, National Optical Astronomy Observatory (United States) and Winer Observatory (United States); K. Zelaya, National Optical Astronomy Observatory (United States)

9147 10 **TAIPAN: optical spectroscopy with StarBugs** [9147-35]

K. Kuehn, J. Lawrence, D. M. Brown, S. Case, Australian Astronomical Observatory (Australia); M. Colless, The Australian National Univ. (Australia); R. Content, L. Gers, Australian Astronomical Observatory (Australia); J. Gilbert, Australian Astronomical Observatory (Australia) and Univ. of Oxford (United Kingdom); M. Goodwin, A. M. Hopkins, Australian Astronomical Observatory (Australia); M. Ireland, Australian National Univ. (Australia); N. P. F. Lorente, R. Muller, V. Nichani, A. Rakman, Australian Astronomical Observatory (Australia); S. N. Richards, The Univ. of Sydney (Australia); W. Saunders, N. F. Staszak, J. Tims, L. G. Waller, Australian Astronomical Observatory (Australia)

9147 12 **mxSPEC: a massively multiplexed full-disk spectroheliograph for solar physics research** [9147-37]

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9147 13 **BATMAN: a DMD-based multi-object spectrograph on Galileo telescope** [9147-38]

F. Zamkotsian, Lab. d'Astrophysique de Marseille, CNRS (France); P. Spano, INAF - Osservatorio Astronomico di Brera (Italy); P. Lanzoni, H. Ramarijaona, Lab. d'Astrophysique de Marseille, CNRS (France); M. Moschetti, M. Riva, INAF - Osservatorio Astronomico di Brera (Italy); W. Bon, Lab. d'Astrophysique de Marseille, CNRS (France); L. Nicastro, INAF - IASF Bologna (Italy); E. Molinari, R. Cosentino, A. Ghedina, M. Gonzalez, INAF - Telescopio Nazionale Galileo (Spain); P. Di Marcantonio, I. Coretti, R. Cirami, INAF - Osservatorio Astronomico di Trieste (Italy); F. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); L. Valenziano, INAF - IASF Bologna (Italy)

SESSION 6 HIGH SPECTRAL RESOLUTION INSTRUMENTS I

9147 14 **Infrared Doppler instrument (IRD) for the Subaru telescope to search for Earth-like planets around nearby M-dwarfs** [9147-39]

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9147 15

SPIRou: the near-infrared spectropolarimeter/high-precision velocimeter for the Canada-France-Hawaii telescope [9147-40]

É. Artigau, Univ. de Montréal (Canada); D. Kouach, J.-F. Donati, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); R. Doyon, Univ. de Montréal (Canada); X. Delfosse, Institut de Planétologie et d'Astrophysique de Grenoble, CNRS, Univ. Joseph Fourier (France); S. Baratchart, M. Lacombe, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); C. Moutou, Canada-France-Hawaii Telescope (United States); P. Rabou, Institut de Planétologie et d'Astrophysique de Grenoble, CNRS, Univ. Joseph Fourier (France); L. P. Parès, Y. Micheau, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); S. Thibault, Univ. Laval (Canada); V. A. Reshetov, NRC - Herzberg Institute of Astrophysics (Canada); B. Dubois, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); O. Hernandez, P. Vallée, Univ. de Montréal (Canada); S.-Y. Wang, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); F. Dolon, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); F. A. Pepe, Observatoire Astronomique de l'Univ. de Genève (Switzerland); F. Bouchy, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (Switzerland); N. Striebig, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); F. Hénault, Institut de Planétologie et d'Astrophysique de Grenoble, CNRS, Univ. Joseph Fourier (France); D. Loop, L. Sadelmyer, NRC - Herzberg Institute of Astrophysics (Canada); G. Barrick, T. Vermeulen, Canada-France-Hawaii Telescope (United States); M. Dupieux, Institut de Recherche en Astrophysique et Planétologie, CNR, Univ. de Toulouse (France); G. Hébrard, Institut d'Astrophysique de Paris, CNRS, Univ. Pierre et Marie Curie (France); I. Boisse, Univ. do Porto (Portugal); E. Martioli, Lab. Nacional de Astrofísica (Brazil); S. H. P. Alencar, Univ. Federal de Minas Gerais (Brazil); J.-D. do Nascimento, Univ. Federal do Rio Grande do Norte (Brazil); P. Figueira, Univ. do Porto (Portugal)

9147 16

NRES: the network of robotic Echelle spectrographs [9147-41]

J. D. Eastman, Las Cumbres Observatory Global Telescope (United States) and Univ. of California, Santa Barbara (United States); T. M. Brown, Las Cumbres Observatory Global Telescope (United States) and Univ. of Colorado Boulder (United States); J. Hygelund, Las Cumbres Observatory Global Telescope (United States); J. van Eyken, Las Cumbres

Observatory Global Telescope (United States) and Univ. of California, Santa Barbara (United States); J. R. Tufts, Las Cumbres Observatory Global Telescope (United States); S. Barnes, Stuart Barnes Optical Design (Netherlands)

- 9147 17 **High resolution broad-band spectroscopy in the NIR using the Triplespec externally dispersed interferometer at the Hale telescope** [9147-42]
D. J. Erskine, Lawrence Livermore National Lab. (United States); J. Edelstein, M. Sirk, E. Wishnow, Y. Ishikawa, E. McDonald, W. V. Shourt, Space Sciences Lab., Univ. of California, Berkeley (United States)
- 9147 18 **A design for high-resolution spectroscopy with adaptive optics at the Large Binocular Telescope** [9147-43]
R. O. Reynolds, L. Dettmann, J. C. Guerra, Large Binocular Telescope Observatory (United States)
- 9147 19 **CRRES+: a cross-dispersed high-resolution infrared spectrograph for the ESO VLT** [9147-44]
R. Follert, Thüringer Landessternwarte Tautenburg (Germany); R. J. Dorn, European Southern Observatory (Germany); E. Oliva, INAF - Osservatorio Astrofisico di Arcetri (Italy); J. L. Lizon, European Southern Observatory (Germany); A. Hatzes, Thüringer Landessternwarte Tautenburg (Germany); N. Piskunov, Uppsala Univ. (Sweden); A. Reiners, U. Seemann, Georg-August-Univ. Göttingen (Germany); E. Stempels, U. Heiter, T. Marquart, M. Lockhart, Uppsala Univ. (Sweden); G. Anglada-Escude, Georg-August-Univ. Göttingen (Germany); T. Löwinger, Thüringer Landessternwarte Tautenburg (Germany); D. Baade, J. Grunhut, P. Bristow, B. Klein, Y. Jung, D. J. Ives, F. Kerber, E. Pozna, J. Paufigue, H. U. Kaeufl, European Southern Observatory (Germany); L. Origlia, INAF - Osservatorio Astronomico di Bologna (Italy); E. Valenti, D. Gojak, M. Hilker, L. Pasquini, A. Smette, J. Smoker, European Southern Observatory (Germany)
- 9147 1A **On-sky performance of a high resolution silicon immersion grating spectrometer** [9147-45]
J. Ge, S. Powell, B. Zhao, S. Schofield, F. Varosi, C. Warner, J. Liu, S. Sithajan, L. Avner, H. Jakeman, J. A. Gittelmacher, W. A. Yoder, Univ. of Florida (United States); M. Muterspaugh, M. Williamson, J. E. Maxwell, Tennessee State Univ. (United States)
- 9147 1C **A laser frequency comb featuring sub-cm/s precision for routine operation on HARPS** [9147-47]
R. A. Probst, Max-Planck-Institut für Quantenoptik (Germany); G. Lo Curto, G. Avila, European Southern Observatory (Germany); B. L. Canto Martins, J. R. de Medeiros, Univ. Federal do Rio Grande do Norte (Brazil); M. Esposito, J. I. González Hernández, Instituto de Astrofísica de Canarias (Spain); T. W. Hänsch, Max-Planck-Institut für Quantenoptik (Germany); R. Holzwarth, Max-Planck-Institut für Quantenoptik (Germany) and Menlo Systems GmbH (Germany); F. Kerber, European Southern Observatory (Germany); I. C. Leão, Univ. Federal do Rio Grande do Norte (Brazil); A. Manescau, L. Pasquini, European Southern Observatory (Germany); R. Rebolo-López, Instituto de Astrofísica de Canarias (Spain); T. Steinmetz, Max-Planck-Institut für Quantenoptik (Germany) and Menlo Systems GmbH (Germany); T. Udem, Max-Planck-Institut für Quantenoptik (Germany); Y. Wu, Max-Planck-Institut für Quantenoptik (Germany) and Menlo Systems GmbH (Germany)

- 9147 1D **Design and early performance of IGRINS (Immersion Grating Infrared Spectrometer)** [9147-48]
 C. Park, Korea Astronomy and Space Science Institute (Korea, Republic of); D. T. Jaffe, The Univ. of Texas at Austin (United States); I.-S. Yuk, M.-Y. Chun, Korea Astronomy and Space Science Institute (Korea, Republic of); S. Pak, Kyung Hee Univ. (Korea, Republic of); K.-M. Kim, Korea Astronomy and Space Science Institute (Korea, Republic of); M. Pavel, H. Lee, The Univ. of Texas at Austin (United States); H. Oh, Korea Astronomy and Space Science Institute (Korea, Republic of) and Univ. of Science and Technology (Korea, Republic of); U. Jeong, Korea Astronomy and Space Science Institute (Korea, Republic of); C. K. Sim, H.-I. Lee, H. A. Nguyen Le, Kyung Hee Univ. (Korea, Republic of); J. Strubhar, M. Gully-Santiago, The Univ. of Texas at Austin (United States); J. S. Oh, S.-M. Cha, B. Moon, K. Park, Korea Astronomy and Space Science Institute (Korea, Republic of); C. Brooks, The Univ. of Texas at Austin (United States); K. Ko, J.-Y. Han, J. Nah, Korea Astronomy and Space Science Institute (Korea, Republic of); P. C. Hill, The Univ. of Texas at Austin (United States); S. Lee, Space Environment Lab. (Korea, Republic of); S. Barnes, Stuart Barnes Optical Design (Netherlands); Y. S. Yu, Korea Astronomy and Space Science Institute (Korea, Republic of); K. Kaplan, G. Mace, The Univ. of Texas at Austin (United States); H. Kim, J.-J. Lee, N. Hwang, Korea Astronomy and Space Science Institute (Korea, Republic of); B.-G. Park, Korea Astronomy and Space Science Institute (Korea, Republic of) and Univ. of Science and Technology (Korea, Republic of)
- 9147 1E **High resolution near IR spectroscopy with GIANO-TNG** [9147-49]
 L. Origlia, INAF - Osservatorio Astronomico di Bologna (Italy); E. Oliva, C. Baffa, G. Falcini, E. Giani, F. Massi, INAF - Osservatorio Astrofisico di Arcetri (Italy); P. Montegriffo, INAF - Osservatorio Astronomico di Bologna (Italy); N. Sanna, INAF - Osservatorio Astrofisico di Arcetri (Italy); S. Scuderi, INAF - Osservatorio Astrofisico di Catania (Italy); M. Sozzi, A. Tozzi, INAF - Osservatorio Astrofisico di Arcetri (Italy); I. Carleo, Bologna Univ. (Italy) and INAF - Osservatorio Astrofisico di Padova (Italy); R. Gratton, INAF - Osservatorio Astrofisico di Padova (Italy); F. Ghinassi, M. Lodi, Telescopio Nazionale Galileo (Spain)

SESSION 7 HIGH SPECTRAL RESOLUTION INSTRUMENTS II

- 9147 1F **CARMENES instrument overview** [9147-50]
 A. Quirrenbach, Landessternwarte Heidelberg (Germany); P. J. Amado, Instituto de Astrofísica de Andalucía (Spain); J. A. Caballero, Ctr. de Astrobiología (Spain); R. Mundt, Max-Planck-Institut für Astronomie (Germany); A. Reiners, Institut für Astrophysik Göttingen (Germany); I. Ribas, Institut de Ciències de l'Espai (Spain); W. Seifert, Landessternwarte Heidelberg (Germany); M. Abril, Instituto de Astrofísica de Andalucía (Spain); J. Aceituno, Calar Alto Observatory (Spain); F. J. Alonso-Floriano, Univ. Complutense de Madrid (Spain); M. Ammler-von Eiff, Thüringer Landessternwarte Tautenburg (Germany); R. Antona Jiménez, Instituto de Astrofísica de Andalucía (Spain); H. Anwand-Heerwart, Institut für Astrophysik Göttingen (Germany); M. Azzaro, Calar Alto Observatory (Spain); F. Bauer, Institut für Astrophysik Göttingen (Germany); D. Barrado, Calar Alto Observatory (Spain); S. Becerril, Instituto de Astrofísica de Andalucía (Spain); V. J. S. Béjar, Instituto de Astrofísica de Canarias (Spain); D. Benítez, Calar Alto Observatory (Spain); Z. M. Berdiñas, M. C. Cárdenas, E. Casal, A. Claret, Instituto de Astrofísica de Andalucía (Spain); J. Colomé, Institut de Ciències de l'Espai (Spain); M. Cortés-Contreras, Univ. Complutense de Madrid (Spain); S. Czesla, Hamburger Sternwarte (Germany); M. Doellinger, Thüringer Landessternwarte Tautenburg (Germany); S. Dreizler, Institut für Astrophysik Göttingen (Germany); C. Feiz, Landessternwarte Heidelberg (Germany); M. Fernández, Instituto de Astrofísica de Andalucía (Spain); D. Galadí, Calar Alto Observatory (Spain);

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9147 1G **The Habitable-zone Planet Finder: A status update on the development of a stabilized fiber-fed near-infrared spectrograph for the for the Hobby-Eberly telescope** [9147-51]

S. Mahadevan, L. W. Ramsey, R. Terrien, S. Halverson, A. Roy, F. Hearty, E. Levi, G. K. Stefansson, P. Robertson, C. Bender, C. Schwab, The Pennsylvania State Univ. (United States); M. Nelson, Univ. of Virginia (United States)

9147 1H **ESPRESSO: the radial velocity machine for the VLT** [9147-52]

D. Mégevand, Observatoire de l'Univ. de Genève (Switzerland); F. M. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); P. Di Marcantonio, INAF - Osservatorio Astronomico di Trieste (Italy); A. Cabral, Univ. de Lisboa (Portugal); M. Riva, INAF - Osservatorio Astronomico di Brera (Italy); M. Abreu, Univ. de Lisboa (Portugal); F. Pepe, Observatoire de l'Univ. de Genève (Switzerland); S. Cristiani, INAF - Osservatorio Astronomico di Trieste (Italy); R. Rebolo Lopez, Instituto de Astrofísica de Canarias (Spain); N. C. Santos, Univ. do Porto (Portugal); H. Dekker, European Southern Observatory (Germany); M. Aliverti, INAF - Osservatorio Astronomico di Brera (Italy); C. Allende, M. Amate, Instituto de Astrofísica de Canarias (Spain); G. Avila, European Southern Observatory (Germany); V. Baldini, INAF - Osservatorio Astronomico di Trieste (Italy); T. Bandy, Univ. Bern (Switzerland); P. Bristow, European Southern Observatory (Germany); C. Broeg, Univ. Bern (Switzerland); R. Cirami, INAF - Osservatorio Astronomico di Trieste (Italy); J. Coelho, Univ. de Lisboa (Portugal); P. Conconi, INAF - Osservatorio Astronomico di Brera (Italy); I. Coretti, G. Cupani, V. D'Odorico, INAF - Osservatorio Astronomico di Trieste (Italy); V. De Caprio, INAF - Osservatorio Astronomico di Brera (Italy); B. Delabre, R. Dorn, European Southern Observatory (Germany); P. Figueira, Univ. do Porto (Portugal); A. Fragoso, Instituto de Astrofísica de Canarias (Spain); S. Galeotta, INAF - Osservatorio Astronomico di Trieste (Italy); L. Genolet, Observatoire de l'Univ. de Genève (Switzerland); R. Gomes, Univ. de Lisboa (Portugal); J. González Hernández, Instituto de Astrofísica de Canarias (Spain); I. Hughes, Observatoire de l'Univ. de Genève (Switzerland); O. Iwert, F. Kerber, European Southern Observatory (Germany); M. Landoni, INAF - Osservatorio Astronomico di Brera (Italy); J.-L. Lizon, European Southern Observatory (Germany); C. Lovis, C. Maire, Observatoire de l'Univ. de Genève (Switzerland); M. Masetta, INAF - Osservatorio Astronomico di Trieste (Italy); C. C. J. A. P. Martins, Univ. do Porto (Portugal); P. Molaro, INAF - Osservatorio Astronomico di Trieste (Italy); M. A. S. Monteiro, Univ. do Porto (Portugal); M. Moschetti, INAF - Osservatorio Astronomico di Brera (Italy); A. Oliveira, Univ. de Lisboa (Portugal); M. R. Zapatero Osorio, Ctr. de Astrobiología (Spain); E. Poretti, INAF - Osservatorio Astronomico di Brera (Italy); J. L. Rasilla, S. Santana Tschudi, Instituto de Astrofísica de Canarias (Spain); P. Santos, Univ. de Lisboa (Portugal); D. Sosnowska, Observatoire de l'Univ. de Genève (Switzerland); S. Sousa, Univ. do Porto (Portugal); F. Tenegi, Instituto de Astrofísica de Canarias (Spain); G. Toso, INAF - Osservatorio Astronomico di Brera (Italy); E. Vanzella, M. Viel, INAF - Osservatorio Astronomico di Trieste (Italy)

- 9147 1I **PIMMS échelle: the next generation of compact diffraction limited spectrographs for arbitrary input beams** [9147-53]
C. H. Betters, S. G. Leon-Saval, J. Bland-Hawthorn, S. N. Richards, The Univ. of Sydney (Australia); T. A. Birks, I. Gris-Sánchez, Univ. of Bath (United Kingdom)
- 9147 1J **Progress on the Gemini High-Resolution Optical Spectrograph (GHOST) design** [9147-54]
M. J. Ireland, Australian National Univ. (Australia); A. Anthony, G. Burley, E. Chisholm, NRC - Herzberg Institute of Astrophysics (Canada); V. Churilov, Australian Astronomical Observatory (Australia); J. Dunn, NRC - Herzberg Institute of Astrophysics (Canada); G. Frost, J. Lawrence, Australian Astronomical Observatory (Australia); D. Loop, NRC - Herzberg Institute of Astrophysics (Canada); P. McGregor, The Australian National Univ. (Australia); S. Martell, Univ. of New South Wales (Australia); A. McConnachie, NRC - Herzberg Institute of Astrophysics (Canada); R. M. McDermid, Australian Astronomical Observatory (Australia) and Macquarie Univ. (Australia); J. Pazder, V. Reshetov, NRC - Herzberg Institute of Astrophysics (Canada); J. G. Robertson, A. Sheinis, J. Tims, Australian Astronomical Observatory (Australia); P. Young, The Australian National Univ. (Australia); R. Zhelem, Australian Astronomical Observatory (Australia)

SESSION 8 HIGH SPATIAL RESOLUTION INSTRUMENTS I

- 9147 1K **The integral field spectrograph for the Gemini planet imager** [9147-55]
J. E. Larkin, J. K. Chilcote, T. Aliado, Univ. of California, Los Angeles (United States); B. J. Bauman, Lawrence Livermore National Lab. (United States); G. Brims, J. M. Canfield, Univ. of California, Los Angeles (United States); A. Cardwell, Gemini Observatory (Chile); D. Dillon, UARC, Univ. of California, Santa Cruz (United States); R. Doyon, Univ. de Montréal (Canada); J. Dunn, NRC - Herzberg Institute of Astrophysics (Canada); M. P. Fitzgerald, Univ. of California, Los Angeles (United States); J. R. Graham, Univ. of California, Berkeley (United States); S. Goodsell, M. Hartung, P. Hibon, Gemini Observatory (Chile); P. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Univ. de Montréal (Canada); C. A. Johnson, E. Kress, Univ. of California, Los Angeles (United States); Q. M. Konopacky, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); B. A. Macintosh, Lawrence Livermore National Lab. (United States) and Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); K. G. Magnone, Univ. of California, Los Angeles (United States); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); I. S. McLean, Univ. of California, Los Angeles (United States); D. Palmer, Lawrence Livermore National Lab. (United States); M. D. Perrin, Space Telescope Science Institute (United States); C. Quiroz, F. Rantakyro, N. Sadakuni, Gemini Observatory (Chile); L. Saddlemyer, NRC - Herzberg Institute of Astrophysics (Canada); A. Serio, Gemini Observatory (Chile); S. Thibault, Univ. Laval (Canada); S. J. Thomas, NASA Ames Research Ctr. (United States) and UARC, Univ. of California, Santa Cruz (United States); P. Vallee, Univ. de Montréal (Canada); J. L. Weiss, Univ. of California, Los Angeles (United States)
- 9147 1L **The SPHERE IFS at work** [9147-56]
R. Claudi, E. Giro, M. Turatto, A. Baruffolo, INAF - Osservatorio Astronomico di Padova (Italy); P. Bruno, INAF - Osservatorio Astrofisico di Catania (Italy); E. Cascone, V. DeCaprio, INAF - Osservatorio Astronomico di Capodimonte (Italy); S. Desidera, INAF - Osservatorio Astronomico di Padova (Italy); R. Dorn, European Southern Observatory (Germany); D. Fantinel, INAF - Osservatorio Astronomico di Padova (Italy); G. Finger, European Southern Observatory (Germany); R. Gratton, L. Lessio, INAF - Osservatorio Astronomico di Padova (Italy); J. L. Lizon, European Southern Observatory (Germany); A. L. Maire, D. Mesa,

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9147 1M **The LINC-NIRVANA high resolution imager: challenges from the lab to first light** [9147-57]
T. M. Herbst, Max-Planck-Institut für Astronomie (Germany); R. Ragazzoni, INAF - Osservatorio Astronomico di Padova (Italy); A. Eckart, Univ. zu Köln (Germany); G. Weigelt, Max-Planck-Institut für Radioastronomie (Germany)

9147 1O **Operation and performance of the mid-infrared camera, NOMIC, on the Large Binocular Telescope** [9147-59]
W. F. Hoffmann, P. M. Hinz, D. Defrère, J. M. Leisenring, A. J. Skemer, P. A. Arbo, M. Montoya, Steward Observatory, The Univ. of Arizona (United States); B. Mennesson, Jet Propulsion Lab. (United States)

9147 1P **FRIDA, the diffraction limited NIR imager and IFS for the Gran Telescopio Canarias: status report** [9147-60]
J. A. López, Univ. Nacional Autónoma de México (Mexico); J. Acosta, Instituto de Astrofísica de Canarias (Spain); L. C. Alvarez, Univ. Nacional Autónoma de México (Mexico); V. Bringas, Ctr. de Ingeniería y Desarrollo Industrial (Mexico); N. Cardiel, Univ. Complutense de Madrid (Spain); D. M. Clark, Univ. Nacional Autónoma de México (Mexico); A. Corrales, Ctr. de Ingeniería y Desarrollo Industrial (Mexico); S. Cuevas, O. Chapa, Univ. Nacional Autónoma de México (Mexico); J. J. Díaz, Instituto de Astrofísica de Canarias (Spain); S. S. Eikenberry, Univ. of Florida (United States); C. Eliche, Univ. Complutense de Madrid (Spain); C. Espejo, R. Flores, J. Fuentes, Univ. Nacional Autónoma de México (Mexico); J. Gallego, Univ. Complutense de Madrid (Spain); J. Garcés, Univ. Nacional Autónoma de México (Mexico); F. Garzón, Instituto de Astrofísica de Canarias (Spain); P. Hammersley, European Southern Observatory (Germany); C. Keiman, G. Lara, Univ. Nacional Autónoma de México (Mexico); P. López, Instituto de Astrofísica de Canarias (Spain); D. Lucero, Ctr. de Ingeniería y Desarrollo Industrial (Mexico); H. Moreno, Instituto de Astrofísica de Canarias (Spain); S. Pascual, Univ. Complutense de Madrid (Spain); J. Patrón, A. Prieto, Instituto de Astrofísica de Canarias (Spain); A. Rodríguez, B. Rodríguez, Ctr. de Ingeniería y Desarrollo Industrial (Mexico); B. Sánchez, Univ. Nacional Autónoma de México (Mexico); D. Torres, J. Uribe, Ctr. de Ingeniería y Desarrollo Industrial (Mexico); A. Watson, Univ. Nacional Autónoma de México (Mexico)

Part Two

9147 1Q **Development and recent results from the Subaru coronagraphic extreme adaptive optics system** [9147-61]
N. Jovanovic, Subaru Telescope, National Astronomical Observatory of Japan (United States); O. Guyon, Subaru Telescope, National Astronomical Observatory of Japan (United States) and Steward Observatory, The Univ. of Arizona (United States); F. Martinache, Observatoire de la Côte d'Azur (France); C. Clergeon, G. Singh, Subaru Telescope, National Astronomical Observatory of Japan (United States) and LESIA, Observatoire de Paris à Meudon (France); T. Kudo, Subaru Telescope, National Astronomical Observatory of Japan (United States); K. Newman, College of Optical Sciences, The Univ. of Arizona (United States) and NASA Ames Research Ctr. (United States); J. Kuhn, E. Serabyn, Jet

Propulsion Lab. (United States); B. Norris, P. Tuthill, P. Stewart, The Univ. of Sydney (Australia); E. Huby, G. Perrin, S. Lacour, S. Vievard, LESIA, Observatoire de Paris à Meudon (France); N. Murakami, O. Fumika, Hokkaido Univ. (Japan); Y. Minowa, Y. Hayano, Subaru Telescope, National Astronomical Observatory of Japan (United States); J. White, Gemini Observatory (United States); O. Lai, Subaru Telescope, National Astronomical Observatory of Japan (United States); F. Marchis, SETI Institute (United States); G. Duchene, Univ. of California, Berkeley (United States) and Univ. Grenoble Alpes, CNRS, Institut de Planetologie et d'Astrophysique de Grenoble (France); T. Kotani, Subaru Telescope, National Astronomical Observatory of Japan (United States); J. Woillez, European Southern Observatory (Germany)

9147 1R **High contrast polarimetry in the infrared with SPHERE on the VLT [9147-62]**

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9147 1S **High-precision polarimetry at the Mont-Mégantic Observatory with the new polarimeter POMM [9147-63]**

P. Bastien, O. Hernandez, L. Albert, É. Artigau, R. Doyon, Univ. de Montréal (Canada); L. Drissen, Univ. Laval (Canada); D. Lafrenière, A. F. J. Moffat, N. St-Louis, Univ. de Montréal (Canada)

9147 1T **High-resolution imaging in the visible on large ground-based telescopes [9147-64]**

C. MacKay, Univ. of Cambridge (United Kingdom); R. Rebolo, Consejo Superior de Investigaciones Científicas (Spain); J. Crass, D. L. King, Univ. of Cambridge (United Kingdom); L. Labadie, Univ. zu Köln (Germany); V. González Escalera, M. Puga, Instituto de Astrofísica de Canarias (Spain); A. Pérez Garrido, Univ. Politécnica de Cartagena (Spain); R. López, A. Oscoz, J. A. Pérez-Prieto, L. F. Rodríguez-Ramos, S. Velasco, Instituto de Astrofísica de Canarias (Spain); I. Villó, Univ. Politécnica de Cartagena (Spain)

SESSION 9 HIGH SPATIAL RESOLUTION INSTRUMENTS II

9147 1U **ERIS: preliminary design phase overview [9147-66]**

H. Kuntschner, L. Jochum, P. Amico, J. K. Dekker, F. Kerber, E. Marchetti, M. Accardo, R. Brast, M. Brinkmann, R. D. Conzelmann, B.-A. Delabre, M. Duchateau, E. Fedrigo, G. Finger, C. Frank, F. G. Rodriguez, B. Klein, J. Knudstrup, M. Le Louarn, L. Lundin, A. Modigliani, M. Mueller, M. Neeser, S. Tordo, E. Valenti, European Southern Observatory (Germany); F. Eisenhauer, E. Sturm, H. Feuchtgruber, E. M. George, M. Hartl, R. Hofmann, H. Huber, M. P. Plattner, J. Schubert, K. Tarantik, E. Wiezorrek, Max-Planck-Institut für extraterrestrische Physik (Germany); M. R. Meyer, S. P. Quanz, A. M. Glauser, ETH Zürich (Switzerland); H. Weisz, Ingenieurbureau für den Maschinenbau (Germany); S. Esposito,

M. Xompero, G. Agapito, J. Antichi, V. Biliotti, M. Bonaglia, R. Briguglio, L. Carbonaro, G. Cresci, L. Fini, E. Pinna, A. T. Puglisi, F. Quirós-Pacheco, A. Riccardi, G. Di Rico, INAF - Osservatorio Astrofisico di Arcetri (Italy); C. Arcidiacono, INAF - Osservatorio Astronomico di Bologna (Italy); M. Dolci, INAF - Osservatorio Astronomico di Teramo (Italy)

- 9147 1V **High-contrast planet imager for Kyoto 4m segmented telescope** [9147-67]
T. Matsuo, Kyoto Univ. (Japan); N. Murakami, Hokkaido Univ. (Japan); T. Kotani, National Astronomical Observatory of Japan (Japan); H. Kawahara, The Univ. of Tokyo (Japan); N. Natsume, M. Kino, K. Yamamoto, Kyoto Univ. (Japan); H. Imada, Univ. of Tsukuba (Japan); M. Kurita, Kyoto Univ. (Japan); M. Iribe, H. Nishida, Osaka Electro-Communication Univ. (Japan); M. Kida, H. Kitou, Hokkaido Univ. (Japan); K. Ishikawa, RIKEN (Japan); Y. Uda, Osaka Electro-Communication Univ. (Japan); H. Tokoro, Nano-Optics Research Institute (Japan); T. Nagata, F. Iwamuro, Kyoto Univ. (Japan); N. Miura, The Univ. of Tokyo (Japan); S. Oya, Subaru Telescope, National Astronomical Observatory of Japan (United States); Y. Itoh, Nishi-Harima Astronomical Observatory (Japan); H. Shibai, Osaka Univ. (Japan); M. Tamura, National Astronomical Observatory of Japan (Japan) and The Univ. of Tokyo (Japan)
- 9147 1W **Construction and status of the CHARIS high contrast imaging spectrograph** [9147-68]
T. D. Groff, N. J. Kasdin, M. A. Limbach, M. Galvin, M. A. Carr, G. Knapp, T. Brandt, C. Loomis, N. Jarosik, Princeton Univ. (United States); K. Mede, National Astronomical Observatory of Japan (Japan); M. W. McElwain, NASA Goddard Space Flight Ctr. (United States); M. Janson, Princeton Univ. (United States); O. Guyon, N. Jovanovic, N. Takato, F. Martinache, Subaru Telescope, National Astronomical Observatory of Japan (United States); M. Hayashi, National Astronomical Observatory of Japan (Japan)

SESSION 10 INSTRUMENTS FOR EXTREMELY LARGE TELESCOPES

- 9147 1Y **Status of the instrumentation program for the Giant Magellan Telescope (Invited Paper)** [9147-70]
G. H. Jacoby, A. Bouchez, Giant Magellan Telescope Organization (United States); M. Colless, The Australian National Univ. (Australia); D. DePoy, Texas A&M Univ. (United States); D. Jaffe, The Univ. of Texas at Austin (United States); J. Lawrence, Australian Astronomical Observatory (Australia); P. McGregor, The Australian National Univ. (Australia); R. Bernstein, Giant Magellan Telescope Organization (United States) and Carnegie Observatories (United States); S. Shectman, Carnegie Observatories (United States); A. Szentgyorgyi, Harvard-Smithsonian Ctr. for Astrophysics (United States)
- 9147 1Z **The E-ELT instrument roadmap: a status report (Invited Paper)** [9147-71]
S. K. Ramsay, M. M. Casali, J. C. González, N. Hubin, European Southern Observatory (Germany)
- 9147 20 **An update on the wide field, multi-object, moderate-resolution, spectrograph for the Giant Magellan Telescope** [9147-72]
D. L. DePoy, R. Allen, T. Li, J. L. Marshall, C. Papovich, T. Prochaska, Texas A&M Univ. (United States); S. Shectman, Carnegie Observatories (United States)
- 9147 21 **METIS: the mid-infrared E-ELT imager and spectrograph** [9147-73]
B. R. Brandl, Leiden Univ. (Netherlands); M. Feldt, Max-Planck-Institut für Astronomie (Germany); A. Glasse, UK Astronomy Technology Ctr. (United Kingdom); M. Guedel, Univ. Wien (Austria); S. Heikamp, M. Kenworthy, Leiden Univ. (Netherlands); R. Lenzen,

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9147 22 **GMTNIRS (Giant Magellan Telescope Near-Infrared Spectrograph): optimizing the design for maximum science productivity and minimum risk** [9147-74]

D. T. Jaffe, The Univ. of Texas at Austin (United States); S. Barnes, Stuart Barnes Optical Design (New Zealand); C. Brooks, M. Gully-Santiago, The Univ. of Texas at Austin (United States); S. Pak, Kyung Hee Univ. (Korea, Republic of); C. Park, I. Yuk, Korea Astronomy and Space Science Institute (Korea, Republic of)

9147 23 **HIRES: the high resolution spectrograph for the E-ELT** [9147-75]

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9147 24 **The Infrared Imaging Spectrograph (IRIS) for TMT: instrument overview** [9147-76]

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9147 25

HARMONI: the first light integral field spectrograph for the E-ELT [9147-77]

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9147 26

A preliminary design for the GMT-Consortium Large Earth Finder (G-CLEF) [9147-78]

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9147 27 **MOSAIC at the E-ELT: A multi-object spectrograph for astrophysics, IGM and cosmology** [9147-79]

F. Hammer, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); B. Barbuy, Univ. de São Paulo (Brazil); J. G. Cuby, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); L. Kaper, Univ. van Amsterdam (Netherlands); S. Morris, Durham Univ. (United Kingdom); C. J. Evans, UK Astronomy Technology Ctr. (United Kingdom); P. Jagourel, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); G. Dalton, Univ. of Oxford (United Kingdom) and Rutherford Appleton Lab. (United Kingdom); P. Rees, UK Astronomy Technology Ctr. (United Kingdom); M. Puech, M. Rodrigues, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); D. Pearson, UK Astronomy Technology Ctr. (United Kingdom); K. Disseau, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France)

9147 28 **Conceptual design of the MOBIE imaging spectrograph for TMT** [9147-80]

B. C. Bigelow, Giant Magellan Telescope Organization (United States); M. V. Radovan, Univ. of California Observatories (United States); R. A. Bernstein, Giant Magellan Telescope Organization (United States); P. M. Onaka, H. Yamada, S. Isani, Institute for Astronomy, Univ. of Hawai'i (United States); S. Miyazaki, S. Ozaki, National Astronomical Observatory of Japan (Japan)

9147 29 **Astrophotonic micro-spectrographs in the era of ELTs** [9147-81]

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POSTER SESSION: INSTRUMENT PROGRAMS AND NEW SCIENCE INSTRUMENTS AND UPGRADES

9147 2C **Updated optical design and trade-off study for MOONS, the Multi-Object Optical and Near Infrared spectrometer for the VLT** [9147-84]

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9147 2D **Optical, mechanical and electronic design and integration of POMM, a polarimeter for the Observatoire du mont Mégantic** [9147-85]

M. R. Leclerc, P. Côté, F. Duchesne, INO (Canada); P. Bastien, Univ. de Montréal (Canada); O. Hernandez, Univ. de Montréal (Canada) and Observatoire du Mont Mégantic (Canada); P. Colonna d'Istria, Univ. de Montréal (Canada); M. Demers, M. Girard, M. Savard, D. Lemieux, INO (Canada); S. Thibault, D. Brousseau, Univ. Laval (Canada)

9147 2F **A polarimetric unit for HARPS-North at the Telescopio Nazionale Galileo: HANPO** [9147-87]

F. Leone, Univ. degli Studi di Catania (Italy) and INAF - Osservatorio Astrofisico di Catania (Italy); M. Cecconi, R. Cosentino, A. Ghedina, INAF - Fundación Galileo Galilei (Spain); M. Giarrusso, Univ. degli Studi di Catania (Italy) and INAF - Osservatorio Astrofisico di Catania (Italy); M. Gonzalez, V. Lorenzi, INAF - Fundación Galileo Galilei (Spain); M. Munari, INAF - Osservatorio Astrofisico di Catania (Italy); H. Perez Ventura, L. Riverol, J. San Juan, INAF - Fundación Galileo Galilei (Spain); S. Scuderi, INAF - Osservatorio Astrofisico di Catania (Italy)

9147 2G **An off-the-shelf guider for the Palomar 200-inch telescope: interfacing amateur astronomy software with professional telescopes for an easy life** [9147-88]

F. Clarke, J. Lynn, N. Thatte, M. Tecza, Univ. of Oxford (United Kingdom)

9147 2H **Design updates and status of the fourth generation TripleSpec spectrograph** [9147-89]

E. Schlawin, T. L. Herter, C. Henderson, Cornell Univ. (United States); J. C. Wilson, Univ. of Virginia (United States); R. Probst, D. Sprayberry, National Optical Astronomy Observatory (United States); M. Bonati, P. Schurter, D. James, M. Warner, R. Tighe, Cerro Tololo Inter-American Observatory (Chile); J. D. Adams, Univ. Research Space Association (United States); M. Martinez, Cerro Tololo Inter-American Observatory (Chile)

9147 2J **A Fabry-Perot and grism imaging spectrograph LISS (Line Imager and Slit Spectrograph)** [9147-91]

Y. Hashiba, M. Doi, S. Sako, T. Morokuma, The Univ. of Tokyo (Japan); H. Kuncarayakti, Millennium Institute of Astrophysics (Chile) and Univ. de Chile (Chile); M. Kokubo, K. Mitsuda, H. Takahashi, K. Tateuchi, The Univ. of Tokyo (Japan); M. Watanabe, H. Nakao, Hokkaido Univ. (Japan)

9147 2K **The mechanical design for the WEAVE prime focus corrector system** [9147-93]

D. C. Abrams, K. Dee, Isaac Newton Group of Telescopes (Spain); T. Agócs, NOVA ASTRON (Netherlands); E. Lhome, Isaac Newton Group of Telescopes (Spain); J. Peñate, Instituto de Astrofísica de Canarias (Spain); A. Jaskó, E. Bánya, MTA Research Ctr. for Astronomy and Earth Sciences (Hungary); J. A. Burgal, Instituto de Astrofísica de Canarias (Spain); G. Dalton, STFC Rutherford Appleton Lab. (United Kingdom) and Univ. of Oxford (United Kingdom); K. Middleton, STFC Rutherford Appleton Lab. (United Kingdom); P. Bonifacio, GEPI, Observatoire de Paris à Meudon (France); J. A. L. Aguerri, Instituto de Astrofísica de Canarias (Spain); S. C. Trager, Univ. of Groningen (Netherlands); M. Balcells, Isaac Newton Group of Telescopes (Spain)

- 9147 2L **Conceptual design of a low resolution spectrograph for the Astronomical Observatory of Córdoba** [9147-94]
D. Q. Nagasawa, J. L. Marshall, D. L. DePoy, N. Mondrik, Texas A&M Univ. (United States)
- 9147 2M **The GRAVITY spectrometers: design report of the optomechanics and active cryogenic mechanisms** [9147-95]
M. Wiest, S. Yazici, Univ. zu Köln (Germany); S. Fischer, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); M. Thiel, Kayser-Threde GmbH (Germany); M. Haug, Max-Planck-Institut für extraterrestrische Physik (Germany); C. Araujo-Hauck, Gemini Observatory (Chile); C. Straubmeier, I. Wank, Univ. zu Köln (Germany); F. Eisenhauer, Max-Planck-Institut für extraterrestrische Physik (Germany); G. Perin, Lab. d'Etudes Spatiales et d'Instrumentation en Astrophysique (France), LESIA, Observatoire de Paris, CNRS, UPMC, Univ. Paris Diderot (France), and Groupement d'Intérêt Scientifique PHASE (France); W. Brandner, Max-Planck-Institut für Astronomie (Germany); K. Perraut, Lab. d'Astrophysique Observatoire de Grenoble (France); A. Amorim, CENTRA-SIM (Portugal); M. Schöller, European Southern Observatory (Germany); A. Eckart, Univ. zu Köln (Germany) and Max-Planck-Institut für Radioastronomie (Germany)
- 9147 2N **First-generation instrumentation for the Discovery Channel Telescope** [9147-96]
T. A. Bida, E. W. Dunham, P. Massey, H. G. Roe, Lowell Observatory (United States)
- 9147 2Q **POMM: design of rotating mechanism and hexapod structure** [9147-99]
P. Côté, M. Leclerc, M. Demers, INO (Canada); P. Bastien, O. Hernandez, Univ. de Montréal (Canada)
- 9147 2R **Testing fully depleted CCD** [9147-100]
R. Casas, Institut de Ciències de l'Espai (Spain); L. Cardiel-Sas, Institut de Física d'Altes Energies (Spain); F. J. Castander, Institut de Ciències de l'Espai (Spain); J. Jiménez, Institut de Física d'Altes Energies (Spain); J. de Vicente, Ctr. de Investigaciones Energéticas, Medioambientales y Tecnológicas (Spain)
- 9147 2S **Readout electronics of physics of accelerating universe camera** [9147-101]
J. de Vicente, J. Castilla, Ctr. de Investigaciones Energéticas, Medioambientales y Tecnológicas (Spain); J. Jiménez, L. Cardiel-Sas, J. M. Illa, Institut de Física d'Altes Energies (Spain)
- 9147 2T **Acousto-optical imaging spectropolarimetric devices: new opportunities and developments** [9147-102]
V. Y. Molchanov, S. P. Anikin, S. I. Chizhikov, K. B. Yushkov, O. Y. Makarov, National Univ. of Science and Technology "MISiS" (Russian Federation); A. M. Tatarnikov, S. A. Potanin, V. F. Esipov, Lomonosov Moscow State Univ. (Russian Federation)
- 9147 2V **The near infrared camera for the Subaru Prime Focus Spectrograph** [9147-104]
S. A. Smee, Johns Hopkins Univ. (United States); J. E. Gunn, Princeton Univ. (United States); M. Golebiowski, R. Barkhouser, Johns Hopkins Univ. (United States); S. Vivès, S. Pascal, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. Carr, Princeton Univ. (United States); S. C. Hope, Johns Hopkins Univ. (United States); C. Loomis, Princeton Univ. (United States); M. Hart, Johns Hopkins Univ. (United States); H. Sugai, N. Tamura, A. Shimono, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan)

- 9147 2W **Detector driver systems and photometric estimates for RIMAS** [9147-105]
V. L. Toy, Univ. of Maryland, College Park (United States); A. S. Kutyrev, Univ. of Maryland, College Park (United States) and NASA Goddard Space Flight Ctr. (United States); E. I. Lyness, NASA Goddard Space Flight Ctr. (United States); M. Muench, Norwegian Univ. of Science and Technology (Norway); F. D. Robinson, G. N. Lotkin, NASA Goddard Space Flight Ctr. (United States); J. I. Capone, S. Veilleux, Univ. of Maryland, College Park (United States); S. H. Moseley, N. A. Gehrels, NASA Goddard Space Flight Ctr. (United States); S. N. Vogel, Univ. of Maryland, College Park (United States)
- 9147 2X **FIFI-LS: the facility far-infrared spectrometer for SOFIA** [9147-106]
R. Klein, SOFIA-USRA, NASA Ames Research Ctr. (United States); S. Beckmann, A. Bryant, S. Colditz, C. Fischer, F. Fumi, Univ. Stuttgart (Germany); N. Geis, Max-Planck-Institut für extraterrestrische Physik (Germany); R. Hönlé, A. Krabbe, Univ. Stuttgart (Germany); L. Looney, Univ. of Illinois at Urbana-Champaign (United States); A. Poglitsch, W. Raab, Max-Planck-Institut für extraterrestrische Physik (Germany); F. Rebell, Univ. Stuttgart (Germany); M. Savage, SOFIA-USRA, NASA Ames Research Ctr. (United States)
- 9147 2Y **FLITECAM: early commissioning results** [9147-108]
S. E. Logsdon, I. S. McLean, Univ. of California, Los Angeles (United States); E. E. Becklin, USRA, NASA Ames Research Ctr. (United States); E. W. Dunham, Lowell Observatory (United States); R. T. Hamilton, USRA, NASA Ames Research Ctr. (United States); C. A. Johnson, Univ. of California, Los Angeles (United States); J. W. Milburn, California Institute of Technology (United States); M. L. Savage, S. S. Shenoy, USRA, NASA Ames Research Ctr. (United States); E. C. Smith, NASA Ames Research Ctr. (United States); W. D. Vacca, USRA, NASA Ames Research Ctr. (United States)
- 9147 2Z **One controlling and driving module based on FPGA in optical fiber positioning device** [9147-111]
J. Guo, Y. Gu, Y. Jin, C. Zhai, Univ. of Science and Technology of China (China)
- 9147 30 **Weather monitor station and 225 GHz radiometer system installed at Sierra Negra: the Large Millimeter Telescope site** [9147-112]
D. Ferrusca, J. Contreras R., Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico)
- 9147 32 **Near-infrared wavelength calibration of astrophysical spectrographs with the emission spectrum of the CN molecule** [9147-115]
A. Boesch, A. Reiners, Georg-August-Univ. Göttingen (Germany); P. F. Bernath, Old Dominion Univ. (United States); A. Seifahrt, The Univ. of Chicago (United States)
- 9147 33 **The characteristics and development status of the control and housekeeping electronics of FRIDA** [9147-116]
J. J. Díaz, Instituto de Astrofísica de Canarias (Spain); R. Flores-Meza, B. Sánchez, Univ. Nacional Autónoma de México (Mexico); J. Patrón, Instituto de Astrofísica de Canarias (Spain)
- 9147 34 **Fibre positioning concept for the WEAVE spectrograph at the WHT** [9147-117]
I. J. Lewis, Univ. of Oxford (United Kingdom); G. B. Dalton, Univ. of Oxford (United Kingdom) and Rutherford Appleton Lab. (United Kingdom); M. Brock, J. Gilbert, Univ. of Oxford (United Kingdom); D. C. Abrams, Isaac Newton Group of Telescopes (Spain); J. A. L. Aguerri, Instituto de Astrofísica de Canarias (Spain); P. Bonifacio, GEPI, Observatoire de Paris (France); K. Middleton, Rutherford Appleton Lab. (United Kingdom); S. C. Trager, Univ. of Groningen (Netherlands)

- 9147 35 **Precise angular positioning at 6K: the FIFI-LS grating assembly** [9147-118]
F. Rebell, Univ. Stuttgart (Germany); W. Raab, Max-Planck-Institut für extraterrestrische Physik (Germany); S. Colditz, S. Beckmann, A. Bryant, C. Fischer, F. Fumi, Univ. Stuttgart (Germany); N. Geis, Max-Planck-Institut für extraterrestrische Physik (Germany); R. Hönle, Univ. Stuttgart (Germany); R. Klein, SOFIA-USRA (United States); A. Krabbe, Univ. Stuttgart (Germany) and Deutsches SOFIA Institut (Germany); L. Looney, Univ. of Illinois at Urbana-Champaign (United States); A. Poglitsch, Max-Planck-Institut für extraterrestrische Physik (Germany); S. Ragan, Max-Planck Institut fuer Astronomie (Germany); M. Savage, SOFIA-USRA, NASA Ames Research Ctr. (United States)
- 9147 36 **Cryogenic optical systems for the rapid infrared imager/spectrometer (RIMAS)** [9147-119]
J. I. Capone, Univ. of Maryland, College Park (United States); D. A. Content, NASA Goddard Space Flight Ctr. (United States); A. S. Kutyrev, Univ. of Maryland, College Park (United States) and NASA Goddard Space Flight Ctr. (United States); F. D. Robinson, G. N. Lotkin, NASA Goddard Space Flight Ctr. (United States) and Global Science and Technology, Inc. (United States); V. L. Toy, S. Veilleux, Univ. of Maryland, College Park (United States); S. H. Moseley, N. A. Gehrels, NASA Goddard Space Flight Ctr. (United States); S. N. Vogel, Univ. of Maryland, College Park (United States)
- 9147 37 **An update on the development of IO:I: a NIR imager for the Liverpool Telescope** [9147-120]
R. M. Barnsley, I. A. Steele, S. D. Bates, C. J. Mottram, Liverpool John Moores Univ. (United Kingdom)
- 9147 38 **The precise measurement of the attenuation coefficients of various IR optical materials applicable to immersion grating** [9147-121]
S. Kaji, Kyoto-Sangyo Univ. (Japan); Y. Sarugaku, Japan Aerospace Exploration Agency (Japan); Y. Ikeda, Photocoding (Japan) and Kyoto-Sangyo Univ. (Japan); N. Kobayashi, The Univ. of Tokyo (Japan); K. Nakanishi, S. Kondo, Kyoto-Sangyo Univ. (Japan); C. Yasui, The Univ. of Tokyo (Japan); H. Kawakita, Kyoto-Sangyo Univ. (Japan)
- 9147 39 **Mechanical design of mounts for IGRINS focal plane arrays and field flattening lenses** [9147-122]
J. S. Oh, C. Park, S.-M. Cha, I.-S. Yuk, K.-M. Kim, M.-Y. Chun, K. Ko, H. Oh, U. Jeong, J. Nah, Korea Astronomy and Space Science Institute (Korea, Republic of); H. Lee, McDonald Observatory, The Univ. of Texas at Austin (United States); M. Pavel, D. T. Jaffe, The Univ. of Texas at Austin (United States)
- 9147 3B **ARNICA and LonGSp: the refurbishment of two near infrared instruments** [9147-124]
S. Koshida, L. Vanzi, D. Guzman, R. Leiva, Pontificia Univ. Católica de Chile (Chile); M. A. Bonati, Cerro Tololo Inter-American Observatory (Chile); R. L. Avilés, Pontificia Univ. Católica de Chile (Chile); C. Baffa, F. Palla, F. Mannucci, INAF - Osservatorio Astrofisico di Arcetri (Italy); T. C. Shen, Pontificia Univ. Católica de Chile (Chile) and Blue Shadows Astronomy and Engineering Ltd. (Chile); V. Suc, Pontificia Univ. Católica de Chile (Chile)
- 9147 3C **Revised specifications and current development status of MIMIZUKU: the mid-infrared instrument for the TAO 6.5-m telescope** [9147-125]
T. Kamizuka, T. Miyata, S. Sako, R. Ohsawa, K. Asano, M. Uchiyama, K. Okada, M. Uchiyama, T. Nakamura, I. Sakon, T. Onaka, The Univ. of Tokyo (Japan); H. Katata, Japan Aerospace Exploration Agency (Japan); T. Aoki, The Univ. of Tokyo (Japan) and Kiso Observatory, The Univ. of Tokyo (Japan); M. Doi, N. M. Kato, K. Kawara, Y. Kitagawa, K. Kohno, M. Konishi, The Univ. of Tokyo (Japan); S. Koshida, Pontificia Univ. Católica de Chile (Chile); T. Minezaki, T. Morokuma, K. Motohara, The Univ. of Tokyo (Japan); T. Soyano, The Univ. of Tokyo (Japan) and Kiso Observatory, The Univ. of Tokyo (Japan); H. Takahashi,

Y. Tamura, T. Tanabé, M. Tanaka, The Univ. of Tokyo (Japan); K. Tarusawa, The Univ. of Tokyo (Japan) and Kiso Observatory, The Univ. of Tokyo (Japan); K. Tateuchi, S. Todo, Y. Yoshii, The Univ. of Tokyo (Japan)

- 9147 3E **Daytime site characterisation of La Palma, and its relation to night-time conditions** [9147-128]
M. J. Townson, A. Kellerer, J. Osborn, T. Butterley, T. Morris, R. W. Wilson, Durham Univ. (United Kingdom)
- 9147 3G **First successful deployment of the ZIMPOL-3 system at the GREGOR telescope** [9147-130]
R. Ramelli, Istituto Ricerche Solari Locarno (Switzerland); D. Gisler, Istituto Ricerche Solari Locarno (Switzerland) and Kiepenheuer-Institut für Sonnenphysik (Germany); M. Bianda, Istituto Ricerche Solari Locarno (Switzerland); N. Bello González, S. Berdyugina, D. Soltau, Kiepenheuer-Institut für Sonnenphysik (Germany)
- 9147 3I **MuSiCa image slicer prototype at 1.5-m GREGOR solar telescope** [9147-132]
A. Calcines, R. L. López, Instituto de Astrofísica de Canarias (Spain); M. Collados, Instituto de Astrofísica de Canarias (Spain) and Univ. de La Laguna (Spain); N. Vega Reyes, Instituto de Astrofísica de Canarias (Spain)
- 9147 3J **Gemini Planet Imager observational calibrations I: overview of the GPI data reduction pipeline** [9147-133]
M. D. Perrin, Space Telescope Science Institute (United States); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); P. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Univ. de Montréal (Canada); D. Savransky, Cornell Univ. (United States); M. Millar-Blanchaer, Univ. of Toronto (Canada); S. G. Wolff, Johns Hopkins Univ. (United States) and Space Telescope Science Institute (United States); J.-B. Ruffio, SETI Institute (United States); J. J. Wang, Univ. of California, Berkeley (United States); Z. H. Draper, Univ. of Victoria (Canada) and NRC - Herzberg Institute of Astrophysics (Canada); N. Sadakuni, Gemini Observatory (Chile); C. Marois, NRC - Herzberg Institute of Astrophysics (Canada) and Univ. of Victoria (Canada); A. Rajan, Arizona State Univ. (United States); M. P. Fitzgerald, Univ. of California, Los Angeles (United States); B. Macintosh, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Lawrence Livermore National Lab. (United States); J. R. Graham, Univ. of California, Berkeley (United States); R. Doyon, Univ. de Montréal (Canada); J. E. Larkin, J. K. Chilcote, Univ. of California, Los Angeles (United States); S. J. Goodsell, Gemini Observatory (Chile); D. W. Palmer, Lawrence Livermore National Lab. (United States); K. Labrie, Gemini Observatory (United States); M. Beaulieu, Observatoire de la Côte d'Azur, Univ. de Nice Sophia-Antipolis (France); R. J. De Rosa, Arizona State Univ. (United States) and Univ. of Exeter (United Kingdom); A. Z. Greenbaum, Johns Hopkins Univ. (United States) and Space Telescope Science Institute (United States); M. Hartung, P. Hibon, Gemini Observatory (Chile); Q. Konopacky, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); D. Lafreniere, Univ. de Montréal (Canada); J.-F. Lavigne, ABB, Inc. (Canada); F. Marchis, SETI Institute (United States); J. Patience, Arizona State Univ. (United States); L. Pueyo, Space Telescope Science Institute (United States); F. T. Rantakyrö, Gemini Observatory (Chile); R. Soummer, A. Sivaramakrishnan, Space Telescope Science Institute (United States); S. Thomas, NASA Ames Research Ctr. (United States) and Univ. of California, Santa Cruz (United States); K. Ward-Duong, Arizona State Univ. (United States); S. Wiktorowicz, Univ. of California, Santa Cruz (United States)

- 9147 3K **KOALA, a wide-field 1000 element integral-field unit for the Anglo-Australian Telescope: assembly and commissioning** [9147-134]
R. Zhelem, J. Brzeski, S. Case, V. Churilov, S. Ellis, T. Farrell, A. Green, A. Heng, A. Horton, Australian Astronomical Observatory (Australia); M. Ireland, Mount Stromlo Observatory (Australia); D. Jones, Prime Optics (Australia); U. Klauser, J. Lawrence, S. Miziarski, D. Orr, N. Pai, N. Staszak, J. Tims, M. Vuong, L. Waller, P. Xavier, Australian Astronomical Observatory (Australia)
- 9147 3L **Single-lock: a stable Fabry-Perot based wavelength calibrator** [9147-136]
T. M. McCracken, C. A. Jurgenson, D. A. Fischer, R. A. Stoll, A. E. Szymkowiak, J. Bradford, Yale Univ. (United States); W. Rutter, Massachusetts Institute of Technology (United States)
- 9147 3N **225GHz opacity measurements at Summit camp, Greenland, for the GreenLand Telescope (GLT) site testing** [9147-138]
P. L. Martin-Cocher, K. Asada, S. Matsushita, M.-T. Chen, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); P. T. P. Ho, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan) and Harvard-Smithsonian Ctr. for Astrophysics (United States); C. Chen, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan)
- 9147 3O **S4EI (Spectral Sampling with Slicer for Stellar and Extragalactical Instrumentation): a new-generation of 3D spectro-imager dedicated to night astronomy** [9147-139]
F. Sayède, M. Puech, GEPI, Observatoire de Paris à Meudon (France); P. Mein, LESIA, Observatoire de Paris (France); P. Bonifacio, GEPI, Observatoire de Paris à Meudon (France); J.-M. Malherbe, R. Galicher, LESIA, Observatoire de Paris (France); J.-P. Amans, G. Fasola, GEPI, Observatoire de Paris à Meudon (France)
- 9147 3P **Development of Nayoro optical camera and spectrograph for 1.6-m Pirka telescope of Hokkaido University** [9147-140]
H. Nakao, M. Watanabe, K. Sorai, Hokkaido Univ. (Japan); M. Yamada, Kobe Univ. (Japan); Y. Itoh, Univ. of Hyogo (Japan); S. Sako, T. Miyata, The Univ. of Tokyo (Japan)
- 9147 3Q **Instrument control software based on LabVIEW for HARPS-N** [9147-141]
X. Gao, A. Vick, UK Astronomy Technology Ctr. (United Kingdom); A. Glenday, Harvard-Smithsonian Ctr. for Astrophysics (United States); M. Gonzalez, INAF - Fundación Galileo Galilei (Spain)
- 9147 3R **Optomecatronic design and integration of a high resolution equipment Berkut to the 1-meter class telescopes** [9147-142]
R. Granados, R. López, A. Farah, Univ. Nacional Autónoma de México (Mexico)
- 9147 3S **VIRUS instrument collimator assembly** [9147-143]
J. L. Marshall, D. L. DePoy, T. Prochaska, R. D. Allen, P. Williams, J.-P. Rheault, T. Li, D. Q. Nagasawa, C. Akers, D. Baker, E. Boster, C. Campbell, E. Cook, A. Elder, A. Gary, J. Glover, M. James, E. Martin, W. Meador, N. Mondrik, M. Rodriguez-Patino, S. Villanueva Jr., Texas A&M Univ. (United States); G. J. Hill, S. Tuttle, B. Vattiat, H. Lee, McDonald Observatory, The Univ. of Texas at Austin (United States); T. S. Chonis, The Univ. of Texas at Austin (United States); G. B. Dalton, M. Tacon, Univ. of Oxford (United Kingdom)
- 9147 3T **Reverse and concurrent engineering applied of a high resolution equipment Berkut for 1-meter class telescopes** [9147-144]
R. López, R. Granados, A. Farah, Univ. Nacional Autónoma de México (Mexico)

- 9147 3U **Remote and automatic small-scale observatories: experience with an all-sky fireball patrol camera** [9147-145]
F. C. M. Bettonvil, NOVA ASTRON (Netherlands) and Univ. Leiden (Netherlands)
- 9147 3V **Optical integration and verification of LINC-NIRVANA** [9147-146]
J. Moreno-Ventas, H. Baumeister, T. Bertram, P. Bizenberger, F. Briegel, D. Greggio, F. Kittmann, L. Marafatto, L. Mohr, K. Radhakrishnan, H. Schray, Max-Planck-Institut für Astronomie (Germany)
- 9147 3W **The ZIMPOL high contrast imaging polarimeter for SPHERE: system test results** [9147-147]
R. Roelfsema, NOVA ASTRON (Netherlands); A. Bazzon, H. M. Schmid, ETH Zürich (Switzerland); J. Pragt, NOVA ASTRON (Netherlands); D. Gisler, ETH Zürich (Switzerland); C. Dominik, Astronomical Institute Anton Pannekoek (Netherlands); A. Baruffolo, INAF - Osservatorio Astronomico di Padova (Italy); J.-L. Beuzit, IPAG, Univ. Joseph Fourier (France); A. Costille, K. Dohlen, Lab. d'Astrophysique de Marseille, CNRS, Univ. de Provence (France); M. Downing, European Southern Observatory (Germany); E. Elswijk, M. de Haan, NOVA ASTRON (Netherlands); N. Hubin, M. Kasper, European Southern Observatory (Germany); C. Keller, Leiden Observatory (Netherlands); J.-L. Lizon, European Southern Observatory (Germany); D. Mouillet, IPAG, Univ. Joseph Fourier (France); A. Pavlov, Max-Planck-Institut für Astronomie (Germany); P. Puget, IPAG, Univ. Joseph Fourier (France); B. Salasnich, INAF - Osservatorio Astronomico di Padova (Italy); J.-F. Sauvage, ONERA (France); F. Wildi, Observatoire Astronomique de l'Univ. de Genève (Switzerland)
- 9147 3X **PANIC in the lab: status before commissioning** [9147-148]
B. Dorner, A. Huber, Max-Planck-Institut für Astronomie (Germany); M. C. Cárdenas Vázquez, I. M. Ferro Rodríguez, Instituto de Astrofísica de Andalucía (Spain); P. Bizenberger, V. Naranjo, J. Panduro, U. Mall, M. Alter, R. Mathar, C. Storz, R.-R. Rohloff, P. Fopp, W. Laun, Max-Planck-Institut für Astronomie (Germany); J. M. Ibáñez, A. J. García Segura, V. Terrón, Instituto de Astrofísica de Andalucía (Spain); J. W. Fried, Max-Planck-Institut für Astronomie (Germany); M. Fernández, J. F. Rodríguez Gómez, Instituto de Astrofísica de Andalucía (Spain); K. Meisenheimer, Max-Planck-Institut für Astronomie (Germany)

Part Three

- 9147 3Y **PISCO: the Parallel Imager for Southern Cosmology Observations** [9147-149]
B. Stalder, A. A. Stark, S. M. Amato, J. Geary, Harvard-Smithsonian Ctr. for Astrophysics (United States); S. A. Shectman, Carnegie Observatories (United States); C. W. Stubbs, Harvard Univ. (United States) and Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Szentgyorgyi, Harvard-Smithsonian Ctr. for Astrophysics (United States)
- 9147 3Z **SITELLE optical design, assembly, and testing** [9147-150]
D. Brousseau, S. Thibault, S. Fortin-Boivin, Univ. Laval (Canada); H. Zhang, ImmerVision (Canada); P. Vallée, Univ. de Montréal (Canada); H. Auger, L. Drissen, Univ. Laval (Canada)
- 9147 40 **Automated alignment and on-sky performance of the Gemini planet imager coronagraph** [9147-151]
D. Savransky, Cornell Univ. (United States); S. J. Thomas, NASA Ames Research Ctr. (United States); L. A. Poyneer, Lawrence Livermore National Lab. (United States); J. Dunn, NRC - Herzberg Institute of Astrophysics (Canada); B. A. Macintosh, Kavli Institute for

Particle Astrophysics and Cosmology, Stanford Univ. (United States); N. Sadakuni, Gemini Observatory (Chile); D. Dillon, Univ. of California Observatories (United States) and Lick Observatory, Univ. of California, Santa Cruz (United States); S. J. Goodsell, M. Hartung, P. Hibon, F. Rantakyö, A. Cardwell, A. Serio, Gemini Observatory (Chile)

- 9147 43 **Better flat-fielding for ground-based UV spectrographs** [9147-154]
F. Kerber, R. Hanuschik, S. Moehler, European Southern Observatory (Germany); A. Smette, J. Smoker, P. Bourget, European Southern Observatory (Chile); P. J. Dwyer, Energetiq Technology, Inc. (United States); M. Rotschädl, Mountain Photonics GmbH (Germany)
- 9147 44 **Developing micro DC-brushless motor driver and position control for fiber positioners** [9147-155]
L. Jenni, P. Hörler, L. Makarem, J.-P. Kneib, D. Gillet, H. Bleuler, M. Bouri, Ecole Polytechnique Fédérale de Lausanne (Switzerland); F. Prada, G. De Rivera, Univ. Autónoma de Madrid (Spain); J. Sanchez, Instituto de Astrofísica de Andalucía (Spain)
- 9147 45 **A miniature cryogenic scanning Fabry-Perot interferometer for mid-IR to submm astronomical observations** [9147-156]
S. C. Parshley, E. M. Vavagiakis, T. Nikola, G. J. Stacey, Cornell Univ. (United States)
- 9147 46 **The development of ground-based infrared multi-object spectrograph based on the microshutter array** [9147-157]
D.-S. Moon, Univ. of Toronto (Canada); S. Sivanandam, Dunlap Institute of Astronomy and Astrophysics, Univ. of Toronto (Canada); A. S. Kutyrev, S. H. Moseley Jr., NASA Goddard Space Flight Ctr. (United States); J. R. Graham, Univ. of California, Berkeley (United States); A. Roy, Indian Institute of Technology, Kharagpur (India)
- 9147 47 **Optical design of the SuMIRe/PFS spectrograph** [9147-158]
S. Pascal, S. Vives, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); R. Barkhouser, Johns Hopkins Univ. (United States); J. E. Gunn, Princeton Univ. (United States)
- 9147 48 **Spherical grating spectrometers** [9147-159]
D. O'Donoghue, South African Astronomical Observatory (South Africa); J. C. Clemens, The Univ. of North Carolina at Chapel Hill (United States)
- 9147 49 **Inverse analysis method to optimize the optic tolerances of MEGARA: the future IFU and multi-object spectrograph for GTC** [9147-161]
R. Ortiz, E. Carrasco, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); G. Pérez, Ctr. de Investigaciones en Óptica, A.C. (Mexico); E. Sánchez-Blanco, FRACTAL S.L.N.E (Spain); A. Gil de Paz, J. Gallego, Univ. Complutense de Madrid (Spain); R. Cedazo, Univ. Politécnica de Madrid (Spain); J. Iglesias-Páramo, Instituto de Astrofísica de Andalucía (Spain)
- 9147 4A **Status and first results of the Canarias infrared camera experiment (CIRCE) for the Gran Telescopio Canarias** [9147-162]
A. Garner, R. D. Stelter, S. S. Eikenberry, Univ. of Florida (United States); N. Lasso-Cabrera, Ctr. de Estudios de Física del Cosmos de Aragón (Spain); S. N. Raines, Univ. of Florida (United States); M. Charcos, NASA, SOFIA (United States); M. Edwards, Large Binocular Telescope Observatory (United States); A. Marín-Franch, Ctr. de Estudios de Física del Cosmos de Aragón (Spain); K. Ackley, Univ. of Florida (United States); A. J. Cenarro, Ctr. de Estudios de Física del Cosmos de Aragón (Spain); J. G. Bennett, B. Chinn, R. Frommeyer,

M. D. Herlevich, P. Miller, C. H. Murphey, Univ. of Florida (United States); C. Packham, The Univ. of Texas at San Antonio (United States)

- 9147 4B **LINC-NIRVANA: Diffraction limited optics in cryogenic environment** [9147-163]
P. Bizenberger, H. Baumeister, P. Fopp, T. Herbst, W. Laun, L. Mohr, J. Moreno-Ventas, Max-Planck-Institut für Astronomie (Germany)
- 9147 4C **A comparison of concepts for a photonic spectrograph** [9147-164]
R. J. Harris, J. R. Allington-Smith, Durham Univ. (United Kingdom); D. MacLachlan, R. R. Thomson, Scottish Universities Physics Alliance (United Kingdom)
- 9147 4D **MSE spectrograph optical design: a novel pupil slicing technique** [9147-165]
P. Spanò, NRC - Herzberg Institute of Astrophysics (Canada)
- 9147 4E **New GRISMs for AFOSC based on volume phase holographic gratings in photopolymers** [9147-166]
A. Zanutta, Politecnico di Milano (Italy) and INAF - Osservatorio Astronomico di Brera (Italy); A. Bianco, M. Landoni, INAF - Osservatorio Astronomico di Brera (Italy); L. Tomasella, S. Benetti, E. Giro, INAF - Osservatorio Astronomico di Padova (Italy)
- 9147 4F **Characterization of the reflectivity of various black materials** [9147-167]
J. L. Marshall, P. Williams, J.-P. Rheault, T. Prochaska, R. D. Allen, D. L. DePoy, Texas A&M Univ. (United States)
- 9147 4G **FIFI-LS observation planning and data reduction** [9147-168]
A. Bryant, C. Fischer, R. Hönl, S. Beckmann, S. Colditz, F. Fumi, Univ. Stuttgart (Germany); N. Geis, Max-Planck-Institut für extraterrestrische Physik (Germany); C. Iserlohe, Univ. zu Köln (Germany); R. Klein, Universities Space Research Association (United States); A. Krabbe, Univ. Stuttgart (Germany); L. Looney, Univ. of Illinois at Urbana-Champaign (United States); A. Poglitsch, W. Raab, Max-Planck-Institut für extraterrestrische Physik (Germany); S. Ragan, Max-Planck-Institut für Astronomie (Germany); F. Rebell, Univ. Stuttgart (Germany); M. Savage, Universities Space Research Association (United States)
- 9147 4H **Tests and procedures for optimizing EMIR cooling system** [9147-169]
P. Fernández Izquierdo, Instituto de Astrofísica de Canarias (Spain); J. L. Lizon, European Southern Observatory (Germany); M. Á. Núñez Cagigal, J. Patrón Recio, M. Barreto Cabrera, F. Garzón López, Instituto de Astrofísica de Canarias (Spain)
- 9147 4J **Design, alignment, and deployment of the Hobby Eberly Telescope prime focus instrument package** [9147-172]
B. Vattiat, G. J. Hill, H. Lee, W. Moreira, N. Drory, J. Ramsey, L. Elliot, M. Landriau, D. M. Perry, R. Savage, H. Kriel, The Univ. of Texas at Austin (United States); M. Häuser, F. Mangold, Ludwig-Maximilians-Univ. München (Germany)
- 9147 4K **A near-infrared SETI experiment: probability distribution of false coincidences** [9147-173]
J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); S. A. Wright, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Canada); D. Werthimer, Univ. of California, Berkeley (United States); R. R. Treffers, Starman Systems, LLC (United States); G. W. Marcy, Univ. of California, Berkeley (United States); R. P. S. Stone, Lick Observatory, Univ. of California, Santa Cruz (United States); F. Drake, SETI Institute (United States); A. Siemion, Univ. of California, Berkeley (United States)

- 9147 4M **Automatizms in EMIR instrument to improve operation, safety and maintenance** [9147-175]
P. Fernández Izquierdo, M. Núñez Cagigal, R. Barreto Rodríguez, N. Martínez Rey,
S. Santana Tschudi, M. Barreto Cabrera, J. Patrón Recio, F. Garzón López, Instituto de
Astrofísica de Canarias (Spain)
- 9147 4O **HONIR: an optical and near-infrared simultaneous imager, spectrograph, and polarimeter
for the 1.5-m Kanata telescope** [9147-177]
H. Akitaya, Y. Moritani, T. Ui, T. Urano, Y. Ohashi, K. S. Kawabata, Hiroshima Univ. (Japan);
A. Nakashima, Nagoya City Science Museum (Japan); M. Sasada, Kyoto Univ. (Japan);
K. Sakimoto, T. Harao, Hiroshima Univ. (Japan); H. Miyamoto, Molex Japan Co., Ltd.
(Japan); R. Matsui, R. Itoh, K. Takaki, I. Ueno, T. Ohsugi, Hiroshima Univ. (Japan); H. Nakaya,
T. Yamashita, National Astronomical Observatory of Japan (Japan); M. Yoshida, Hiroshima
Univ. (Japan)
- 9147 4Q **PAUCam readout electronics assembly, integration and test (AIT)** [9147-179]
J. Jiménez, J. M. Illa, L. Cardiel-Sas, Institut de Física d'Altes Energies (Spain); J. de Vicente,
J. Castilla, Ctr. de Investigaciones Energéticas, Medioambientales y Tecnológicas (Spain);
R. Casas, Institut de Ciències de l'Espai (Spain)
- 9147 4R **A flux calibration device for the SuperNova Integral Field Spectrograph (SNIFS)** [9147-180]
S. Lombardo, Univ. Bonn (Germany); G. Aldering, Lawrence Berkeley National Lab. (United
States); A. Hoffmann, M. Kowalski, D. Küsters, K. Reif, M. Rigault, Univ. Bonn (Germany)
- 9147 4S **Boresight calibration of FIFI-LS: in theory, in the lab and on sky** [9147-181]
S. Colditz, Univ. Stuttgart (Germany); R. Klein, SOFIA-USRA, NASA Ames Research Ctr.
(United States); S. Beckmann, Univ. Stuttgart (Germany) and Deutsches SOFIA Institut
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A. Krabbe, Univ. Stuttgart (Germany) and Deutsches SOFIA Institut (Germany);
L. W. Looney, Univ. of Illinois at Urbana-Champaign (United States); A. Poglitsch, W. Raab,
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für Astronomie (Germany); F. Rebell, Univ. Stuttgart (Germany); M. L. Savage, SOFIA-USRA,
NASA Ames Research Ctr. (United States)
- 9147 4T **SPHERE/IRDIS: final performance assessment of the dual-band imaging and long slit
spectroscopy modes** [9147-182]
A. Vigan, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. Langlois,
Ctr. de Recherche Astronomique de Lyon, CNRS, Univ. Lyon 1 (France); K. Dohlen, A. Zurlo,
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Grenoble1, CNRS, Institut de Planétologie et d'Astrophysique de Grenoble (France);
J.-F. Sauvage, ONERA (France)
- 9147 4U **Characterization of the atmospheric dispersion corrector of the Gemini planet imager**
[9147-183]
P. Hibon, Gemini South Observatory (Chile); S. Thomas, NASA Ames Research Ctr. (United
States); J. Dunn, J. Atwood, L. Saddlemyer, NRC - Herzberg Institute of Astrophysics
(Canada); N. Sadakuni, Gemini South Observatory (Chile); S. Goodsell, Gemini North
Observatory (United States); B. Macintosh, Stanford Univ. (United States); J. Graham, Univ.
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- 9147 4W **Vibration specifications for VLT instruments** [9147-185]
G. Jakob, J.-L. Lizon, European Southern Observatory (Germany)
- 9147 4X **ARDOLORES: an Arduino based motors control system for DOLORES** [9147-186]
M. Gonzalez, H. Ventura, J. San Juan, L. Di Fabrizio, Telescopio Nazionale Galileo (Spain)
- 9147 4Y **Design and integration of a mechanism for focusing and alignment of the Echelle spectrograph for the telescope of 2.1 meters of the National Astronomic Observatory** [9147-188]
H. O. A. Gutiérrez, A. S. Farah, J. M. Echevarria R., G. D. Sierra, Univ. Nacional Autónoma de México (Mexico)
- 9147 4Z **Gemini planet imager observational calibrations IX: least-squares inversion flux extraction** [9147-189]
Z. H. Draper, Univ. of Victoria (Canada) and NRC - Herzberg Institute of Astrophysics (Canada); C. Marois, NRC - Herzberg Institute of Astrophysics (Canada) and Univ. of Victoria (Canada); S. Wolff, Johns Hopkins Univ. (United States) and Space Telescope Science Institute (United States); M. Perrin, Space Telescope Science Institute (United States); P. J. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Univ. de Montréal (Canada); J.-B. Ruffio, Institut Supérieur de l'Aéronautique et de l'Espace (France) and SETI Institute (United States); F. T. Rantakyro, M. Hartung, S. J. Goodsell, Gemini Observatory (Chile)
- 9147 50 **Gemini planet imager one button approach** [9147-190]
J. Dunn, D. Kerley, L. Saddlemyer, M. Smith, R. Wooff, NRC - Herzberg Institute of Astrophysics (Canada); D. Savransky, Cornell Univ. (United States); D. Palmer, B. Macintosh, Lawrence Livermore National Lab. (United States); J. Weiss, Univ. of California, Los Angeles (United States); C. Quiroz, F. T. Rantakyro, Gemini Observatory (Chile); S. J. Goodsell, Gemini Observatory (United States)
- 9147 51 **A format standard for efficient interchange of high-contrast direct imaging science products** [9147-191]
É. Choquet, Space Telescope Science Institute (United States); A. Vigan, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); R. Soummer, Space Telescope Science Institute (United States); G. Chauvin, Univ. Joseph Fourier-Grenoble 1, CNRS, INSU, IPAG (France); L. Pueyo, M. D. Perrin, D. C. Hines, Space Telescope Science Institute (United States)
- 9147 52 **Environmental control system for Habitable-zone Planet Finder (HPF)** [9147-192]
F. Hearty, The Pennsylvania State Univ. (United States) and Univ. of Virginia (United States); E. Levi, The Pennsylvania State Univ. (United States); M. Nelson, Univ. of Virginia (United States); S. Mahadevan, The Pennsylvania State Univ. (United States) and Ctr. for Exoplanets and Habitable Worlds (United States); A. Burton, Univ. of Virginia (United States); L. Ramsey, C. Bender, R. Terrien, S. Halverson, P. Robertson, A. Roy, The Pennsylvania State Univ. (United States) and Ctr. for Exoplanets and Habitable Worlds (United States); B. Blank, K. Blanchard, PulseRay (United States); G. Stefansson, The Pennsylvania State Univ. (United States)

- 9147 53 **Concept study for DREAMS: a Dedicated Robotic EArths-finding single-Mode Spectrograph** [9147-193]
J. F. P. Spronck, Leiden Observatory, Leiden Univ. (Netherlands)
- 9147 54 **Characterizing U-Ne hollow cathode lamps at near-IR wavelengths for the CARMENES survey** [9147-194]
L. F. Sarmiento, A. Reiners, U. Seemann, U. Lemke, Institut für Astrophysik Göttingen (Germany); J. Winkler, M. Pluto, E. W. Günther, Thüringer Landessternwarte Tautenburg (Germany); A. Quirrenbach, Landessternwarte, Zentrum für Astronomie der Univ. Heidelberg (Germany); P. J. Amado, Instituto de Astrofísica de Andalucía (Spain); I. Ribas, Institut de Ciències de l'Espai (Spain); J. A. Caballero, Ctr. de Astrobiología (Spain); R. Mundt, Max-Planck-Institut für Astronomie (Germany); W. Seifert, Landessternwarte, Zentrum für Astronomie der Univ. Heidelberg (Germany)
- 9147 55 **Gemini planet imager observational calibrations VIII: characterization and role of satellite spots** [9147-195]
J. J. Wang, Univ. of California, Berkeley (United States); A. Rajan, Arizona State Univ. (United States); J. R. Graham, Univ. of California, Berkeley (United States); D. Savransky, Cornell Univ. (United States); P. J. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); K. Ward-Duong, J. Patience, Arizona State Univ. (United States); R. J. De Rosa, Arizona State Univ. (United States) and Univ. of Exeter (United Kingdom); J. Bulger, Arizona State Univ. (United States); A. Sivaramakrishnan, M. D. Perrin, Space Telescope Science Institute (United States); S. J. Thomas, NASA Ames Research Ctr. (United States) and Univ. of California, Santa Cruz (United States); N. Sadakuni, Gemini Observatory (Chile); A. Z. Greenbaum, Johns Hopkins Univ. (United States) and Space Telescope Science Institute (United States); L. Pueyo, Space Telescope Science Institute (United States); C. Marois, NRC - Herzberg Institute of Astrophysics (Canada) and Univ. of Victoria (Canada); B. R. Oppenheimer, American Museum of Natural History (United States); P. Kalas, Univ. of California, Berkeley (United States); A. Cardwell, S. Goodsell, P. Hibon, F. T. Rantakyrö, Gemini Observatory (Chile)
- 9147 56 **MASCARA: opto-mechanical design and integration** [9147-196]
J. F. P. Spronck, A.-L. Lesage, R. Stuik, Leiden Observatory, Leiden Univ. (Netherlands); F. Bettonvil, Leiden Observatory, Leiden Univ. (Netherlands) and NOVA (Netherlands); I. A. G. Snellen, Leiden Observatory, Leiden Univ. (Netherlands)
- 9147 57 **Study on a multi-delay spectral interferometry for stellar radial velocity measurement** [9147-197]
K. Zhang, H. Jiang, J. Tang, H. Ji, Y. Zhu, Nanjing Institute of Astronomical Optics and Technology (China); L. Wang, National Astronomical Observatories (China)
- 9147 58 **Test of multi-object exoplanet search spectral interferometer** [9147-198]
K. Zhang, Nanjing Institute of Astronomical Optics and Technology (China); L. Wang, National Astronomical Observatories (China); H. Jiang, Y. Zhu, Y. Hou, S. Dai, J. Tang, Z. Tang, Y. Zeng, Y. Chen, L. Wang, Z. Hu, Nanjing Institute of Astronomical Optics and Technology (China)
- 9147 5A **Diffraction-limited lucky imaging with a 12" commercial telescope** [9147-201]
B. J. Baptista, National Geospatial-Intelligence Agency (United States)

- 9147 5B **Archon: a modern controller for high performance astronomical CCDs** [9147-202]
G. Bredthauer, Semiconductor Technology Associates Inc. (United States)
- 9147 5C **Near field modal noise reduction using annealed optical fiber** [9147-203]
S. N. Osterman, Johns Hopkins Univ. Applied Physics Lab. (United States) and Univ. of Colorado, Boulder (United States); G. G. Ycas, National Institute of Standards and Technology (United States); C. L. Donaldson, Southwest Research Institute (United States); S. A. Diddams, National Institute of Standards and Technology (United States) and Univ. of Colorado, Boulder (United States); S. Mahadevan, L. W. Ramsey, The Pennsylvania State Univ. (United States); P. P. Plavchan, NASA Exoplanet Science Institute (United States) and Missouri State Univ. (United States)
- 9147 5D **Control and operation of the 1.6 m New Solar Telescope in Big Bear** [9147-204]
J. Varsik, C. Plymate, P. Goode, A. Kosovichev, W. Cao, R. Coulter, K. Ahn, N. Gorceix, S. Shumko, Big Bear Solar Observatory (United States)
- 9147 5F **DigiCam: fully digital compact camera for SST-1M telescope** [9147-206]
J. A. Aguilar, Univ. de Genève (Switzerland); W. Bilnik, AGH Univ. of Science and Technology (Poland); L. Bogacz, Jagiellonian Univ. (Poland); T. Bulik, Univ. of Warsaw (Poland); A. Christov, D. della Volpe, Univ. de Genève (Switzerland); M. Dyrda, Instytut Fizyki Jądrowej (Poland); A. Frankowski, Nicolaus Copernicus Astronomical Ctr. (Poland); M. Grudzińska, Univ. of Warsaw (Poland); J. Grygorczuk, Centrum Badań Kosmicznych (Poland); M. Heller, Univ. de Genève (Poland); B. Idźkowski, Jagiellonian Univ. (Poland); M. Janiak, Nicolaus Copernicus Astronomical Ctr. (Poland); M. Jamroz, Jagiellonian Univ. (Poland); M. Karczewski, Centrum Badań Kosmicznych (Poland); J. Kasperek, AGH Univ. of Science and Technology (Poland); E. Lyard, Univ. de Genève (Switzerland); A. Marszałek, Jagiellonian Univ. (Poland); J. Michałowski, Instytut Fizyki Jądrowej (Poland); R. Moderski, Nicolaus Copernicus Astronomical Ctr. (Poland); T. Montaruli, A. Neronov, Univ. de Genève (Switzerland); J. Nicolau-Kukliński, Centrum Badań Kosmicznych (Poland); J. Niemiec, Instytut Fizyki Jądrowej (Poland); M. Ostrowski, Jagiellonian Univ. (Poland); P. Paśko, Ł. Płatos, Centrum Badań Kosmicznych (Poland); E. Prandini, Univ. de Genève (Switzerland); R. Pruchniewicz, AGH Univ. of Science and Technology (Poland); J. Rafalski, Instytut Fizyki Jądrowej (Poland); P. J. Rajda, AGH Univ. of Science and Technology (Poland); M. Rameez, Univ. de Genève (Switzerland); M. Rataj, Centrum Badań Kosmicznych (Poland); M. Rupiński, AGH Univ. of Science and Technology (Poland); K. Rutkowski, K. Seweryn, M. Sidz, Centrum Badań Kosmicznych (Poland); Ł. Stawarz, M. Stodulska, Jagiellonian Univ. (Poland); M. Stodulski, Instytut Fizyki Jądrowej (Poland); M. Tokarz, Centrum Badań Kosmicznych (Poland); S. Toscano, I. Troyano Pujadas, R. Walter, Univ. de Genève (Switzerland); P. Wawer, R. Wawrzaszek, L. Wiśniewski, Centrum Badań Kosmicznych (Poland); K. Ziętara, Jagiellonian Univ. (Poland); P. Ziółkowski, P. Żychowski, Instytut Fizyki Jądrowej (Poland)
- 9147 5G **Wavelength calibration from 1-5 μ m for the CRIRES+ high-resolution spectrograph at the VLT** [9147-208]
U. Seemann, G. Anglada-Escude, Georg-August-Univ. Göttingen (Germany); D. Baade, P. Bristow, R. J. Dorn, European Southern Observatory (Germany); R. Follert, Thüringer Landessternwarte Tautenburg (Germany); D. Gojak, J. Grunhut, European Southern Observatory (Germany); A. P. Hatzes, Thüringer Landessternwarte Tautenburg (Germany); U. Heiter, Uppsala Univ. (Sweden); D. J. Ives, European Southern Observatory (Germany); P. Jeep, Georg-August Univ. Göttingen (Germany); Y. Jung, H.-U. Käufl, F. Kerber, B. Klein, J. Lizon, European Southern Observatory (Germany); M. Lockhart, Uppsala Univ. (Sweden); T. Löwinger, Thüringer Landessternwarte Tautenburg (Germany); T. Marquart, Uppsala Univ.

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9147 5H **Characterization of new components for a miniaturized heterodyne infrared spectrometer** [9147-209]

P. Krause, Univ. zu Köln (Germany); G. Sonnabend, RPG Radiometer Physics GmbH (Germany); L. Labadie, M. Sornig, Univ. zu Köln (Germany); R. Thomson, A. Arriola, Heriot-Watt Univ. (United Kingdom); A. Rodenas, Univ. Rovira i Virgili (Spain); T. Hewagama, Univ. of Maryland, College Park (United States); F. Rutz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany)

9147 5K **MUSE from Europe to the Chilean Sky** [9147-362]

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- 9147 5L **Spectrophotometric calibration of the Swope and duPont telescopes for the Carnegie supernova project 2** [9147-370]
J.-P. Rheault, N. P. Mondrik, D. L. DePoy, J. L. Marshall, N. B. Suntzeff, Texas A&M Univ. (United States)

POSTER SESSION: SURVEY AND HIGH MULTIPLEX INSTRUMENTS

- 9147 5M **Fibre system of DESI** [9147-210]
J. Allington-Smith, Durham Univ. (United Kingdom); C. Poppett, Lawrence Berkeley National Lab. (United States); D. Bramall, Durham Univ. (United Kingdom); J. Edelstein, Univ. of California, Berkeley (United States); R. Lafever, Lawrence Berkeley National Lab. (United States); J. Schmoll, C. Dunlop, G. Murray, Durham Univ. (United Kingdom); R. Besuner, Univ. of California, Berkeley (United States); G. Talbot, Durham Univ. (United Kingdom)
- 9147 5N **MEGARA fiber bundles** [9147-211]
A. Pérez-Calpena, M. L. García-Vargas, FRACTAL S.L.N.E (Spain); X. Arrillaga, AVS Added Value Solutions (Spain); A. Gil de Paz, Univ. Complutense de Madrid (Spain); E. Sánchez-Blanco, I. Martínez-Delgado, FRACTAL S.L.N.E (Spain); M. A. Carrera, AVS Added Value Solutions (Spain); J. Gallego, Univ. Complutense de Madrid (Spain); E. Carrasco, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); F. M. Sánchez-Moreno, Univ. Politécnica de Madrid (Spain); J. Iglesias-Páramo, Instituto de Astrofísica de Andalucía (Spain)
- 9147 5Q **Prime focus instrument of prime focus spectrograph for Subaru telescope** [9147-213]
S.-Y. Wang, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); D. F. Braun, M. A. Schwochert, Jet Propulsion Lab. (United States); P.-J. Huang, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); M. Kimura, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan) and Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); H.-Y. Chen, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); D. J. Reiley, P. Mao, California Institute of Technology (United States); C. D. Fisher, Jet Propulsion Lab. (United States); N. Tamura, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); Y.-C. Chang, Y.-S. Hu, H.-H. Ling, C.-Y. Wen, R. C.-Y. Chou, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); N. Takato, Subaru Telescope, National Astronomical Observatory of Japan (United States); H. Sugai, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); Y. Ohyama, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); H. Karoji, A. Shimono, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); A. Ueda, National Astronomical Observatory of Japan (Japan)
- 9147 5R **MEGARA main optics opto-mechanics** [9147-214]
E. Castillo-Domínguez, J. L. Avilés, E. Carrasco, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); M. Maldonado, FRACTAL S.L.N.E (Spain); A. Gil de Paz, J. Gallego, Univ. Complutense de Madrid (Spain); R. Cedazo, Univ. Politécnica de Madrid (Spain); J. Iglesias, Instituto de Astrofísica de Andalucía (Spain)
- 9147 5S **Metrology camera system of prime focus spectrograph for Subaru telescope** [9147-215]
S.-Y. Wang, R. C.-Y. Chou, Y.-C. Chang, P.-J. Huang, Y.-S. Hu, H.-Y. Chen, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); N. Tamura, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); N. Takato, Subaru Telescope, National Astronomical Observatory of Japan (United States); H.-H. Ling, Institute

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- 9147 5U **Multiplexed astronomical images: advantages, method, and prototype instrument** [9147-217]
S. Ben-Ami, B. Zackay, A. Rubin, I. Sagiv, A. Gal-Yam, E. O. Ofek, Weizmann Institute of Science (Israel)
- 9147 5V **BOMBOLO: A 3-arms optical imager for SOAR Observatory** [9147-218]
D. Guzmán, Pontificia Univ. Católica de Chile (Chile); R. Angeloni, Pontificia Univ. Católica de Chile (Chile) and Max-Planck-Institut für Astronomie (Germany); T. Puzia, Pontificia Univ. Católica de Chile (Chile); D. Jones, Prime Optics (Australia); A. Jordán, Pontificia Univ. Católica de Chile (Chile); T. Anguita, Univ. Andrés Bello (Chile); S. Benecchi, Planetary Science Institute (United States) and Carnegie Institution of Washington (United States); E. Garcés, Pontificia Univ. Católica de Chile (Chile)
- 9147 5W **MMP: multi mini prism device for ESPRESSO APSU, prototyping, and integration** [9147-219]
S. dell'Agostino, M. Riva, M. Genoni, M. Landoni, M. Moschetti, M. Aliverti, INAF - Osservatorio Astronomico di Brera (Italy); F. Pepe, D. Mégevand, Observatoire de Genève (Switzerland); F. M. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); S. Cristiani, INAF - Osservatorio Astronomico di Trieste (Italy); A. Cabral, Univ. de Lisboa (Portugal); P. Conconi, INAF - Osservatorio Astronomico di Brera (Italy)
- 9147 5Z **Integration and test activities for the SUMIRE prime focus spectrograph at LAM** [9147-222]
F. Madec, J. Marc, S. Pascal, A. Bozier, D. Le Mignant, S. Vives, D. Ferrand, T. Pegot-Ogier, G. Arthaud, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. Golebiowski, Johns Hopkins Univ. (United States); H. Sugai, N. Tamura, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); J. Gunn, Princeton Univ. (United States); S. Smee, Johns Hopkins Univ. (United States); L. Oliveira, Lab. Nacional de Astrofísica (Brazil)
- 9147 60 **Efficient and affordable catadioptric spectrograph designs for 4MOST and Hector** [9147-223]
W. Saunders, Australian Astronomical Observatory (Australia)
- 9147 62 **Current status of the spectrograph system for the SuMIRe/PFS** [9147-227]
S. Vives, D. Le Mignant, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); J. E. Gunn, Princeton Univ. (United States); S. Smee, Johns Hopkins Univ. (United States); L. Souza de Oliveira, Lab. Nacional de Astrofísica (Brazil); N. Tamura, H. Sugai, Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); R. Barkhouser, Johns Hopkins Univ. (United States); A. Bozier, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. A. Carr, Princeton Univ. (United States); A. C. de Oliveira, Lab. Nacional de Astrofísica (Brazil); D. Ferrand, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. Golebiowski, M. Hart, S. Hope, Johns Hopkins Univ. (United States); M. Jaquet, F. Madec, S. Pascal, T. Pegot-Ogier, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. Vital de Arruda, Lab. Nacional de Astrofísica (Brazil)

- 9147 63 **Focal ratio degradation performance of fiber positioning technology used in the Dark Energy Spectroscopic Instrument (DESI)** [9147-228]
C. L. Poppett, Lawrence Berkeley National Lab. (United States); J. Edelstein, R. Besuner, Space Sciences Lab. (United States); J. H. Silber, Lawrence Berkeley National Lab. (United States)
- 9147 64 **Virtual MOONS: a focal plane simulator for the MOONS thousand-fiber NIR spectrograph** [9147-229]
G. Li Causi, INAF - Osservatorio Astronomico di Roma (Italy); A. Cabral, Univ. of Lisbon (Portugal); D. Ferruzzi, INAF - Osservatorio Astrofisico di Arcetri (Italy); G. Finger, European Southern Observatory (Germany); G. Giacalone, Univ. di Roma La Sapienza (Italy); I. Guinouard, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); D. Lorenzetti, INAF - Osservatorio Astronomico di Roma (Italy); E. Oliva, INAF - Osservatorio Astrofisico di Arcetri (Italy); F. Pedichini, INAF - Osservatorio Astronomico di Roma (Italy); F. Royer, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); S. Todd, STFC UK Astronomy Technology Ctr. (United Kingdom); F. Vitali, INAF - Osservatorio Astronomico di Roma (Italy)
- 9147 65 **Design and performance of a F/#-conversion microlens for prime focus spectrograph at Subaru Telescope** [9147-230]
N. Takato, Y. Tanaka, Subaru Telescope, National Astronomical Observatory of Japan (United States); J. E. Gunn, Princeton Univ. (United States); N. Tamura, A. Shimono, H. Sugai, H. Karoji, Kavli Institute for the Physics and Mathematics of the Universe, The Univ. of Tokyo (Japan); A. Ueda, K. Waseda, National Astronomical Observatory of Japan (Japan); M. Kimura, Y. Ohyama, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan)
- 9147 66 **Preliminary results on the characterization and performances of ZBLAN fiber for infrared spectrographs** [9147-231]
M. Iuzzolino, A. Tozzi, N. Sanna, L. Zangrilli, E. Oliva, INAF - Osservatorio Astrofisico di Arcetri (Italy)
- 9147 67 **The hardware control system for WEAVE at the William Herschel telescope** [9147-232]
J. M. Delgado Hernandez, L. F. Rodríguez-Ramos, Instituto de Astrofísica de Canarias (Spain); D. Cano Infantes, C. Martín, C. Bevil, S. Picó, K. M. Dee, D. C. Abrams, Isaac Newton Group of Telescopes (Spain); I. J. Lewis, Univ. of Oxford (United Kingdom); J. Pragt, R. Stuik, N. Tromp, NOVA ASTRON (Netherlands); G. Dalton, Univ. of Oxford (United Kingdom); J. A. L. Aguerri, Univ. de La Laguna (Spain); P. Bonifacio, Observatoire de Paris à Meudon (France); K. F. Middleton, Rutherford Appleton Lab. (United Kingdom); S. C. Trager, Univ. of Groningen (Netherlands)

Part Four

- 9147 6A **4MOST fiber feed concept design** [9147-235]
D. M. Haynes, R. Winkler, A. Saviauk, R. Haynes, S. Barden, O. Bellido-Tirado, S. Bauer, R. S. de Jong, Leibniz-Institut für Astrophysik Potsdam (Germany); E. Depagne, South African Astronomical Observatory (South Africa); F. Dionies, K. Ehrlich, A. Kelz, Leibniz-Institut für Astrophysik Potsdam (Germany); W. Saunders, Australian Astronomical Observatory (Australia); M. Woche, Leibniz-Institut für Astrophysik Potsdam (Germany)

- 9147 6B **Scrambling and modal noise mitigation in the Habitable Zone Planet Finder fiber feed** [9147-236]
A. Roy, S. Halverson, S. Mahadevan, L. W. Ramsey, The Pennsylvania State Univ. (United States)
- 9147 6C **Development of a new readout system for the near-infrared detector of HONIR** [9147-237]
T. Ui, Hiroshima Univ. (Japan); S. Sako, The Univ. of Tokyo (Japan); T. Yamashita, National Astronomical Observatory of Japan (Japan); H. Akitaya, K. S. Kawabata, Hiroshima Univ. (Japan); H. Nakaya, National Astronomical Observatory of Japan (Japan); Y. Moritani, R. Itoh, K. Takaki, T. Urano, I. Ueno, T. Ohsugi, M. Yoshida, Hiroshima Univ. (Japan); H. Nakao, Hokkaido Univ. (Japan); Y. Hashiba, The Univ. of Tokyo (Japan)
- 9147 6D **Okayama astrophysical observatory wide field camera** [9147-238]
K. Yanagisawa, Y. Shimizu, K. Okita, D. Kuroda, H. Koyano, H. Tsutsui, H. Toda, H. Izumiura, National Astronomical Observatory of Japan (Japan); M. Yoshida, Hiroshima Univ. (Japan); K. Ohta, Kyoto Univ. (Japan); N. Kawai, Tokyo Institute of Technology (Japan); T. Yamamuro, OptCraft (Japan)
- 9147 6E **Polarization properties of a birefringent fiber optic image slicer for diffraction-limited dual-beam spectropolarimetry** [9147-239]
T. Schad, H. Lin, Institute for Astronomy, Univ. of Hawai'i (United States); K. Ichimoto, Kyoto Univ. (Japan); Y. Katsukawa, National Astronomical Observatory of Japan (Japan)
- 9147 6F **The S4I prototype, a beam-slicer dedicated to the new generation Multichannel Subtractive Double Pass for EST imaging spectropolarimetry** [9147-240]
F. Sayède, GEPI, Observatoire de Paris (France); P. Mein, J.-M. Malherbe, LESIA, Observatoire de Paris (France); J.-P. Amans, GEPI, Observatoire de Paris (France); D. Crussaire, R. Lecocguen, LESIA, Observatoire de Paris (France)
- 9147 6H **The design of the WEAVE spectrograph** [9147-242]
K. Rogers, STFC Rutherford Appleton Lab. (United Kingdom); R. Stuik, NOVA ASTRON (Netherlands) and Leiden Observatory, Leiden Univ. (Netherlands); I. A. Steele, Liverpool John Moores Univ. (United Kingdom); J. Pragt, NOVA ASTRON (Netherlands); K. F. Middleton, STFC Rutherford Appleton Lab. (United Kingdom); S. Bates, Liverpool John Moores Univ. (United Kingdom); J. Kragt, N. Tromp, D. Lesman, NOVA ASTRON (Netherlands); E. Lhomé, Isaac Newton Group of Telescopes (Spain); G. Dalton, STFC Rutherford Appleton Lab. (United Kingdom) and Univ. of Oxford (United Kingdom); S. Trager, Univ. of Groningen (Netherlands); R. Navarro, NOVA ASTRON (Netherlands); D. C. Abrams, Isaac Newton Group of Telescopes (Spain); I. Tosh, STFC Rutherford Appleton Lab. (United Kingdom); A. Jasko, Konkoly Thege Miklós Astronomical Institute (Hungary); C. Martin, N. O'Mahony, S. Pico, D. Cano Infantes, Isaac Newton Group of Telescopes (Spain); A. Bianca, INAF - Osservatorio Astronomico di Brera (Italy); J. Delgado, L. F. Rodríguez, Instituto de Astrofísica de Canarias (Spain)
- 9147 6I **The 4MOST instrument concept overview** [9147-243]
R. Haynes, S. Barden, R. de Jong, O. Schnurr, O. Bellido, J. Walcher, D. Haynes, R. Winkler, S.-M. Bauer, F. Dionies, A. Saviauk, C. Chiappini, A. Schwobe, J. Brynnel, M. Steinmetz, Leibniz-Institut für Astrophysik Potsdam (Germany); R. McMahon, Univ. of Cambridge (United Kingdom); S. Feltzing, Lund Observatory (Sweden); P. Francois, GEPI, Observatoire de Paris à Meudon (France); S. Trager, Kapteyn Astronomical Institute, Univ. of Groningen (Netherlands); I. Parry, M. Irwin, N. Walton, D. King, Univ. of Cambridge (United Kingdom); D. Sun, Cavendish Lab., Univ. of Cambridge (United Kingdom);

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9147 6K **Development of a simultaneous two-color near-infrared multi-object spectrograph SWIMS for the TAO 6.5-m telescope** [9147-245]

K. Motohara, M. Konishi, H. Takahashi, K. Tateuchi, Y. Kitagawa, S. Todo, N. M. Kato, R. Ohsawa, The Univ. of Tokyo (Japan); T. Aoki, Kiso Observatory, The Univ. of Tokyo (Japan); K. Asano, M. Doi, T. Kamizuka, K. Kawara, K. Kohno, The Univ. of Tokyo (Japan); S. Koshida, The Univ. of Tokyo (Japan) and Pontificia Univ. Católica de Chile (Chile); T. Minezaki, T. Miyata, T. Morokuma, K. Okada, S. Sako, The Univ. of Tokyo (Japan); T. Soyano, Kiso Observatory, The Univ. of Tokyo (Japan); Y. Tamura, T. Tanabe, M. Tanaka, The Univ. of Tokyo (Japan); K. Tarusawa, Kiso Observatory, The Univ. of Tokyo (Japan); M. Uchiyama, Y. Yoshii, The Univ. of Tokyo (Japan)

9147 6L **Sky background subtraction with fiber-fed spectrographs** [9147-246]

M. Puech, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); M. Rodrigues, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France) and European Southern Observatory (Chile); Y. Yang, H. Flores, F. Royer, K. Disseau, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); T. Gonçalves, Univ. Federal do Rio de Janeiro (Brazil); F. Hammer, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); M. Cirasuolo, SUPA, Institute for Astronomy, Univ. of Edinburgh, Royal Observatory (United Kingdom); C. J. Evans, UK Astronomy Technology Ctr. (United Kingdom); G. Li Causi, INAF - Osservatorio Astronomico di Roma (Italy); R. Maiolino, Univ. of Cambridge (United Kingdom); C. Melo, European Southern Observatory (Chile)

9147 6M **Accuracy research for survey telescope fiber position measurement** [9147-247]

Z. Zhou, Z. Liu, H. Hu, J. Wang, C. Zhai, J. Chu, Univ. of Science and Technology of China (China)

9147 6N **Development of multi-object spectroscopy unit for simultaneous-color wide-field infrared multi-object spectrograph** [9147-248]

H. Takahashi, M. Konishi, K. Motohara, N. M. Kato, K. Tateuchi, Y. Kitagawa, S. Todo, The Univ. of Tokyo (Japan)

9147 6P **Achieving decameter velocity precision with a multi-object spectrograph** [9147-251]

J. I. Bailey III, M. L. Mateo, Univ. of Michigan (United States); J. D. Crane, Carnegie Observatories (United States)

- 9147 6Q **Wide FastCam: a wide field imaging camera for the TCS** [9147-252]
G. Murga, IDOM (Spain); A. Oscoz, R. López, Instituto de Astrofísica de Canarias (Spain); R. Campo, U. Etxegarai, IDOM (Spain); E. Pallé, Instituto de Astrofísica de Canarias (Spain)
- 9147 6R **The DESI wide field corrector optics** [9147-253]
P. Doel, Univ. College London (United Kingdom); M. J. Sholl, Lawrence Berkeley National Lab. (United States); M. Liang, National Optical Astronomy Observatory (United States); D. Brooks, Univ. College London (United Kingdom); B. Flaugher, G. Gutierrez, S. Kent, Fermi National Accelerator Lab. (United States); M. Lampton, T. Miller, Lawrence Berkeley National Lab. (United States); D. Sprayberry, National Optical Astronomy Observatory (United States)
- 9147 6S **MEGARA cryostat advanced design** [9147-254]
D. Ferrusca, E. Castillo-Domínguez, M. Velázquez, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); A. Gil de Paz, Univ. Complutense de Madrid (Spain); E. Carrasco, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); J. Gallego, Univ. Complutense de Madrid (Spain); R. Cedazo, Univ. Politécnica de Madrid (Spain); J. Iglesias-Páramo, Instituto de Astrofísica de Andalucía (Spain)
- 9147 6T **Performance of the Southern African Large Telescope (SALT) High Resolution Spectrograph (HRS)** [9147-256]
L. A. Crause, South African Astronomical Observatory (South Africa); R. M. Sharples, D. G. Bramall, J. Schmoll, P. Clark, E. J. Younger, Durham Univ. (United Kingdom); L. M. G. Tyas, SALT Foundation (South Africa); S. G. Ryan, Univ. of Hertfordshire (United Kingdom); J. D. Brink, O. J. Strydom, D. A. Buckley, M. Wilkinson, SALT Foundation (South Africa); S. M. Crawford, Southern African Large Telescope (South Africa); É. Depagne, SALT Foundation (South Africa)
- 9147 6U **VIRUS instrument enclosures** [9147-257]
T. Prochaska, R. Allen, N. Mondrik, J. P. Rheault, M. Sauseda, E. Boster, M. James, M. Rodriguez-Patino, G. Torres, J. Ham, E. Cook, D. Baker, D. L. DePoy, J. L. Marshall, Texas A&M Univ. (United States); G. J. Hill, McDonald Observatory, The Univ. of Texas at Austin (United States) and The Univ. of Texas at Austin (United States); D. Perry, R. D. Savage, J. M. Good, B. L. Vattiat, McDonald Observatory, The Univ. of Texas at Austin (United States);
- 9147 6V **Presenting a high accuracy Theta-Phi-style fiber-positioner prototype with a 15-mm pitch** [9147-258]
M. Haeuser, F. Lang-Bardl, J. Richter, H.-J. Hess, A. Degwert, A. Karasz, R. Kosyra, Univ.-Sternwarte München (Germany); U. Hopp, R. Bender, Univ.-Sternwarte München (Germany) and Max-Planck-Institut für extraterrestrische Physik (Germany)
- 9147 6X **ROS2: a multichannel vision for the robotic REM telescope** [9147-260]
E. Molinari, INAF - Istituto di Astrofisica Spaziale e Fisica Cosmica (Italy) and INAF - Fundación Galileo Galilei (Spain); S. Covino, G. Crimi, INAF - Osservatorio Astronomico di Brera (Italy); F. D'Alessio, INAF - Osservatorio Astronomico di Roma (Italy); S. Incorvaia, INAF - Istituto di Astrofisica Spaziale e Fisica Cosmica (Italy); D. Fugazza, INAF - Osservatorio Astronomico di Brera (Italy); P. Spanò, NRC - Herzberg Institute of Astrophysics (Canada); G. Toso, D. Tresoldi, INAF - Istituto di Astrofisica Spaziale e Fisica Cosmica (Italy); F. Vitali, INAF - Osservatorio Astronomico di Brera (Italy)

- 9147 6Y **Towards a spectroscopic survey of one hundred thousand spatially resolved galaxies with Hector** [9147-261]
J. S. Lawrence, Australian Astronomical Observatory (Australia); J. Bland-Hawthorn, The Univ. of Sydney (Australia); D. Brown, Australian Astronomical Observatory (Australia); J. J. Bryant, Australian Astronomical Observatory (Australia) and The Univ. of Sydney (Australia); G. Cecil, The Univ. of North Carolina (United States); R. Content, Australian Astronomical Observatory (Australia); S. Croom, The Univ. of Sydney (Australia); L. Gers, P. R. Gillingham, Australian Astronomical Observatory (Australia); S. Richards, The Univ. of Sydney (Australia); W. Saunders, N. Staszak, Australian Astronomical Observatory (Australia)
- 9147 6Z **Monitoring the atmospheric throughput at Cerro Tololo Inter-American Observatory with aTmCam** [9147-262]
T. Li, D. L. DePoy, J. L. Marshall, D. Q. Nagasawa, D. W. Carona, S. Boada, Texas A&M Univ. (United States)
- 9147 70 **Methods for the detection and the characterization of low mass companions using the IFS of SPHERE** [9147-263]
A. Zurlo, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France) and INAF - Osservatorio Astronomico di Padova (Italy); D. Mesa, R. Gratton, R. Claudi, S. Desidera, E. Giro, INAF - Osservatorio Astronomico di Padova (Italy); J.-L. Beuzit, Univ. Joseph Fourier-Grenoble1, CNRS-INSU, Institut de Planétologie et d'Astrophysique de Grenoble (France); K. Dohlen, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); D. Mouillet, P. Puget, Univ. Joseph Fourier-Grenoble1, CNRS-INSU, Institut de Planétologie et d'Astrophysique de Grenoble (France); F. Wildi, Observatoire de Genève, Univ. de Genève (Switzerland); M. Feldt, O. Moeller-Nilsson, Max-Planck-Institut für Astronomie (Germany); A. Baruffolo, D. Fantinel, B. Salasnich, INAF - Osservatorio Astronomico di Padova (Italy); M. Kasper, European Southern Observatory (Germany); A. Costille, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); J.-F. Sauvage, ONERA (France); A. Vigan, C. Moutou, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); M. Langlois, Ctr. de Recherche Astronomique de Lyon, CNRS, Univ. Lyon 1 (France); J. Antichi, INAF - Osservatorio Astrofisico di Arcetri (Italy); A. Pavlov, Max-Planck-Institut für Astronomie (Germany); N. Zimmerman, European Southern Observatory (Germany); M. Turatto, INAF - Osservatorio Astronomico di Padova (Italy)
- 9147 71 **MEGARA optical manufacturing process** [9147-264]
E. Carrasco, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); G. Páez, Ctr. de Investigaciones en Óptica (Mexico); F. Granados, E. Percino, E. Castillo-Domínguez, J. L. Avilés, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); M. L. García-Vargas, Fractal S.L.N.E (Spain); A. Gil de Paz, J. Gallego, Univ. Complutense de Madrid (Spain); J. Iglesias-Páramo, Instituto de Astrofísica de Andalucía (Spain); R. Cedazo, Univ. Politécnica de Madrid (Spain)
- 9147 72 **High speed wide field CMOS camera for Transneptunian Automatic Occultation Survey** [9147-265]
S.-Y. Wang, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); J. C. Geary, S. M. Amato, Harvard-Smithsonian Ctr. for Astrophysics (United States); Y.-S. Hu, H.-H. Ling, P.-J. Huang, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); G. Furesz, Harvard-Smithsonian Ctr. for Astrophysics (United States); H.-Y. Chen, Y.-C. Chang, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); A. Szentgyorgyi, Harvard-Smithsonian Ctr. for Astrophysics (United States); M. Lehner, Institute of Astronomy and Astrophysics, Academia Sinica (Taiwan); T. Norton, Harvard-Smithsonian Ctr. for Astrophysics (United States)

- 9147 73 **Final optical design for the WEAVE two-degree prime focus corrector** [9147-266]
T. Agócs, NOVA ASTRON (Netherlands); D. C. Abrams, E. Lhomé, K. Dee, Isaac Newton Group of Telescopes (Spain); G. Dalton, STFC Rutherford Appleton Lab. (United Kingdom) and Univ. of Oxford (United Kingdom); K. Middleton, STFC Rutherford Appleton Lab. (United Kingdom); P. Bonifacio, GEPI, Observatoire de Paris (France); J. A. L. Aguerri, Instituto de Astrofísica de Canarias (Spain); S. C. Trager, Univ. of Groningen (Netherlands)
- 9147 74 **The guider and wavefront curvature sensor subsystem for the Large Synoptic Survey Telescope** [9147-267]
V. J. Riot, Lawrence Livermore National Lab. (United States); K. Arndt, Purdue Univ. (United States); C. Claver, Large Synoptic Survey Telescope (United States); P. E. Doherty, Harvard Univ. (United States); D. K. Gilmore, P. A. Hascall, S. Herrmann, SLAC National Accelerator Lab. (United States); I. Kotov, P. O'Connor, Brookhaven National Lab. (United States); J. Sebag, Large Synoptic Survey Telescope (United States); C. W. Stubbs, Harvard Univ. (United States); M. Warner, Cerro Tololo Inter-American Observatory (Chile)
- 9147 75 **VIRUS: assembly, testing and performance of 33,000 fibres for HETDEX** [9147-269]
A. Kelz, T. Jahn, D. Haynes, Leibniz-Institut für Astrophysik Potsdam (Germany); G. J. Hill, H. Lee, J. D. Murphy, The Univ. of Texas at Austin (United States); J. Neumann, Leibniz-Institut für Astrophysik Potsdam (Germany); H. Nicklas, Georg-August-Univ. Göttingen (Germany); M. Rutowska, C. Sandin, O. Streicher, Leibniz-Institut für Astrophysik Potsdam (Germany); S. Tuttle, The Univ. of Texas at Austin (United States); M. Fabricius, Max-Planck-Institut für extraterrestrische Physik (Germany); S. M. Bauer, Leibniz-Institut für Astrophysik Potsdam (Germany); B. Vattiat, The Univ. of Texas at Austin (United States); H. Anwand, Georg-August-Univ. Göttingen (Germany); R. Savage, The Univ. of Texas at Austin (United States)
- 9147 77 **A multi-pixel room-temperature local oscillator subsystem for array receivers at 1.9 THz** [9147-272]
J. V. Siles, I. Mehdi, C. Lee, R. Lin, J. Kawamura, E. Schlecht, P. J. Bruneau, P. F. Goldsmith, Jet Propulsion Lab. (United States)
- 9147 78 **Multi-object fibre spectroscopy at the WHT: performance enhancements of AF2+WYFFOS** [9147-374]
L. Domínguez Palmero, D. Cano, C. Fariña, R. Bassom, E. Lhomé, N. O'Mahony, J. Skvarc, A. Ridings, C. R. Benn, D. C. Abrams, M. Balcells, Isaac Newton Group of Telescopes (Spain)
- 9147 79 **The Zwicky transient facility observing system** [9147-375]
R. M. Smith, R. G. Dekany, Caltech Optical Observatories (United States); C. Bebek, Lawrence Berkeley National Lab. (United States); E. Bellm, K. Bui, J. Cromer, P. Gardner, Caltech Optical Observatories (United States); M. Hoff, Lawrence Berkeley National Lab. (United States); S. Kaye, S. Kulkarni, Caltech Optical Observatories (United States); A. Lambert, M. Levi, Lawrence Berkeley National Lab. (United States); D. Reiley, Caltech Optical Observatories (United States)

POSTER SESSION: HIGH SPECTRAL AND SPATIAL RESOLUTION INSTRUMENTS

- 9147 7B **Gemini planet imager observational calibrations X: non-redundant masking on GPI** [9147-135]
A. Z. Greenbaum, Johns Hopkins Univ. (United States); A. Cheetham, The Univ. of Sydney (Australia); A. Sivaramakrishnan, P. Tuthill, B. Norris, Space Telescope Science Institute (Australia); L. Pueyo, The Univ. of Sydney (United States); N. Sadakuni, F. Rantakyrö,

P. Hibon, S. Goodsell, M. Hartung, A. Serio, A. Cardwell, Gemini Observatory (Chile); L. Poyneer, Lawrence Livermore National Lab. (United States); B. Macintosh, Lawrence Livermore National Lab. (United States) and Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); D. Savransky, Cornell Univ. (United States); M. D. Perrin, The Univ. of Sydney (Australia); S. Wolff, Johns Hopkins Univ. (United States); P. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); S. Thomas, NASA Ames Research Ctr. (United States)

- 9147 7C **InnoPOL: an EMCCD imaging polarimeter and 85-element curvature AO system on the 3.6-m AEOS telescope for cost effective polarimetric speckle suppression** [9147-274]
D. Harrington, Institute for Astronomy, Univ. of Hawai'i (United States) and Kiepenheuer-Institut für Sonnenphysik (Germany); S. Berdyugina, Kiepenheuer-Institut für Sonnenphysik (Germany); M. Chun, C. Ftaclas, Institute for Astronomy, Univ. of Hawai'i (United States); D. Gisler, Kiepenheuer-Institut für Sonnenphysik (Germany); J. Kuhn, Institute for Astronomy, Univ. of Hawai'i (United States)
- 9147 7D **APSU @ ESPRESSO: final design towards the integration** [9147-275]
M. Riva, P. Conconi, M. Moschetti, S. Dell'Agostino, M. Genoni, M. Aliverti, INAF - Osservatorio Astronomico di Brera (Italy); F. Pepe, D. Mégevand, Observatoire de Genève, Univ. de Genève (Switzerland); F. M. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); S. Cristiani, INAF - Osservatorio Astronomico di Trieste (Italy); A. Cabral, Univ. de Lisboa (Portugal); P. Spanò, NRC - Herzberg Institute de Astrophysics (Canada)
- 9147 7F **Design of a radial velocity spectrograph for the Moletai Astronomical Observatory** [9147-277]
C. A. Jurgenson, D. A. Fischer, T. M. McCracken, R. A. Stoll, A. E. Szymkowiak, M. J. Giguere, Yale Univ. (United States); F. G. Santoro, G. Muller, ASTRO Electro-Mechanical Engineering (United States)
- 9147 7G **ESPRESSO front end: modular opto-mechanical integration for astronomical instrumentation** [9147-278]
M. Riva, M. Aliverti, M. Moschetti, M. Landoni, S. Dell'Agostino, INAF - Osservatorio Astronomico di Brera (Italy); F. Pepe, D. Mégevand, Observatoire de Genève, Univ. de Genève (Switzerland); F. M. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); S. Cristiani, INAF - Osservatorio Astronomico di Trieste (Italy); A. Cabral, Univ. de Lisboa (Portugal)
- 9147 7H **Gemini planet imager observational calibrations IV: wavelength calibration and flexure correction for the integral field spectrograph** [9147-279]
S. G. Wolff, Johns Hopkins Univ. (United States); M. D. Perrin, Space Telescope Science Institute (United States); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); P. J. Ingraham, Stanford Univ. (United States); F. T. Rantakyro, P. Hibon, Gemini Observatory (Chile)
- 9147 7I **RHEA: the ultra-compact replicable high-resolution exoplanet and asteroseismology spectrograph** [9147-280]
T. Feger, C. Bacigalupo, Macquarie Univ. (Australia); T. R. Bedding, The Univ. of Sydney (Australia); J. Bento, D. W. Coutts, Macquarie Univ. (Australia); M. J. Ireland, Australian National Univ. (Australia); Q. A. Parker, Macquarie Univ. (Australia) and Australian Astronomical Observatory (Australia); A. Rizzuto, I. Spaleniak, Macquarie Univ. (Australia)

- 9147 7J **SHARK (System for coronagraphy with High order Adaptive optics from R to K band), a proposal for the LBT 2nd generation instrumentation** [9147-281]
 J. Farinato, INAF - Osservatorio Astronomico di Padova (Italy); F. Pedichini, INAF - Osservatorio Astronomico di Roma (Italy); E. Pinna, INAF - Osservatorio Astrofisico di Arcetri (Italy); F. Bacciotti, C. Baffa, INAF - Osservatorio Astronomico di Arcetri (Italy); A. Baruffolo, M. Bergomi, INAF - Osservatorio Astronomico di Padova (Italy); P. Bruno, INAF - Osservatorio Astrofisico di Catania (Italy); E. Cappellaro, INAF - Osservatorio Astronomico di Padova (Italy); L. Carbonaro, INAF - Osservatorio Astronomico di Arcetri (Italy); A. Carlotti, Institut de Planétologie et d'Astrophysique de Grenoble (France); M. Centrone, INAF - Osservatorio Astronomico di Roma (Italy); L. Close, J. Codona, Steward Observatory, The Univ. of Arizona (United States); S. Desidera, M. Dima, INAF - Osservatorio Astronomico di Padova (Italy); S. Esposito, INAF - Osservatorio Astronomico di Arcetri (Italy); D. Fantinel, G. Farisato, INAF - Osservatorio Astronomico di Padova (Italy); A. Fontana, INAF - Osservatorio Astronomico di Roma (Italy); W. Gaessler, Max-Planck-Institut für Astronomie (Germany); E. Giallongo, INAF - Osservatorio Astronomico di Roma (Italy); R. Gratton, INAF - Osservatorio Astronomico di Padova (Italy); D. Greggio, INAF - Osservatorio Astronomico di Padova (Italy) and Univ. degli Studi di Padova (Italy); J. C. Guerra, O. Guyon, P. Hinz, Steward Observatory, The Univ. of Arizona (United States); F. Leone, Univ. degli Studi di Catania (Italy); F. Lisi, INAF - Osservatorio Astronomico di Arcetri (Italy); D. Magrin, INAF - Osservatorio Astronomico di Padova (Italy); L. Marafatto, INAF - Osservatorio Astronomico di Padova (Italy) and Univ. di Padova (Italy); M. Munari, I. Pagano, INAF - Osservatorio Astrofisico di Catania (Italy); A. Puglisi, INAF - Osservatorio Astronomico di Arcetri (Italy); R. Ragazzoni, B. Salasnich, INAF - Osservatorio Astronomico di Padova (Italy); E. Sani, INAF - Osservatorio Astronomico di Arcetri (Italy); S. Scuderi, INAF - Osservatorio Astrofisico di Catania (Italy); M. Stangalini, V. Testa, INAF - Osservatorio Astronomico di Roma (Italy); C. Verinaud, Institut de Planétologie et d'Astrophysique de Grenoble (France); V. Viotto, INAF - Osservatorio Astronomico di Padova (Italy)
- 9147 7K **Gemini planet imager observational calibrations III: empirical measurement methods and applications of high-resolution microlens PSFs** [9147-282]
 P. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Univ. de Montréal (Canada); J.-B. Ruffio, SETI Institute (United States) and Institut Supérieur de l'Aéronautique et de l'Espace (Canada); M. D. Perrin, S. G. Wolff, Space Telescope Science Institute (United States); Z. H. Draper, Univ. of Victoria (Canada); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); F. Marchis, SETI Institute (United States); V. Fesquet, Gemini Observatory (Chile)
- 9147 7M **A laser locked Fabry-Perot etalon with 3 cm/s stability for spectrograph calibration** [9147-284]
 Y. V. Gurevich, Yale Univ. (United States); J. Stürmer, Landessternwarte Heidelberg (Germany); C. Schwab, The Pennsylvania State Univ. (United States); T. Führer, Technische Univ. Darmstadt (Germany); S. K. Lamoreaux, Yale Univ. (United States); A. Quirrenbach, Landessternwarte Heidelberg (Germany); T. Walther, Technische Univ. Darmstadt (Germany)
- 9147 7O **Gemini planet imager observational calibrations II: detector performance and calibration** [9147-286]
 P. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Univ. de Montréal (Canada); M. D. Perrin, Space Telescope Science Institute (United States); N. Sadakuni, Gemini Observatory (Chile); J.-B. Ruffio, SETI Institute (United States) and Institut Supérieur de l'Aéronautique et de l'Espace (France); J. Maire, Dunlap

Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); J. Chilcote, J. Larkin, Univ. of California, Los Angeles (United States); F. Marchis, SETI Institute (United States); R. Galicher, LESIA, CNRS, Observatoire de Paris, Univ. Paris Diderot (France); J. Weiss, Univ. of California, Los Angeles (United States)

- 9147 7P **How to inject light efficiently into single-mode fibers** [9147-287]
N. Jovanovic, Subaru Telescope, National Astronomical Observatory of Japan (United States); O. Guyon, Subaru Telescope, National Astronomical Observatory of Japan (United States) and Steward Observatory, Univ. of Arizona (United States); F. Martinache, Observatoire de la Côte d'Azur (France); C. Schwab, The Pennsylvania State Univ. (United States); N. Cvetojevic, The Univ. of Sydney (Australia) and The Australian Astronomical Observatory (Australia)
- 9147 7Q **Manufacturing, integration, and test results of the MATISSE cold optics bench** [9147-288]
F. C. M. Bettonvil, NOVA ASTRON (Netherlands) and Leiden Univ. (Netherlands); G. Kroes, T. Agočs, NOVA ASTRON (Netherlands); A. van Duin, ASTRON (Netherlands); E. Elswijk, M. de Haan, R. ter Horst, J. Kragt, NOVA ASTRON (Netherlands); J. Kuindersma, ASTRON (Netherlands); R. Navarro, R. Roelfsema, M. Schuil, T. Tromp, L. Venema, NOVA ASTRON (Netherlands); F. van Kessel, Irmato Group (Netherlands); A. Jaskó, MTA Research Ctr. for Astronomy and Earth Sciences (Hungary)
- 9147 7R **Concept and optical design of the cross-disperser module for CRIRES+** [9147-289]
E. Oliva, A. Tozzi, D. Ferruzzi, INAF - Osservatorio Astrofisico di Arcetri (Italy); L. Origlia, INAF - Osservatorio Astronomico di Bologna (Italy); A. Hatzes, R. Follert, T. Löwinger, Thüringer Landessternwarte Tautenburg (Germany); N. Piskunov, U. Heiter, M. Lockhart, T. Marquart, E. Stempels, Uppsala Univ. (Sweden); A. Reiners, G. Anglada-Escude, U. Seemann, Georg-August-Univ. Göttingen (Germany); R. J. Dorn, P. Bristow, D. Baade, B. Delabre, D. Gojak, J. Grunhut, B. Klein, M. Hilker, D. J. Ives, Y. Jung, H. U. Kaeufl, F. Kerber, J. L. Lizon, L. Pasquini, J. Paufigue, E. Pozna, A. Smette, J. Smoker, E. Valenti, European Southern Observatory (Germany)
- 9147 7S **Opto-mechanical design of a new cross dispersion unit for the CRIRES+ high resolution spectrograph for the VLT** [9147-290]
J. L. Lizon, B. Klein, European Southern Observatory (Germany); E. Oliva, INAF - Osservatorio di Arcetri (Italy); T. Löwinger, Thüringer Landessternwarte Tautenburg (Germany); G. Anglada Escude, Georg-August-Univ. Göttingen (Germany); D. Baade, P. Bristow, R. J. Dorn, European Southern Observatory (Germany); R. Follert, Thüringer Landessternwarte Tautenburg (Germany); J. Grunhut, European Southern Observatory (Germany); A. Hatzes, Thüringer Landessternwarte Tautenburg (Germany); U. Heiter, Uppsala Univ. (Sweden); D. Ives, Y. Jung, F. Kerber, M. Lockhart, European Southern Observatory (Germany); T. Marquart, Uppsala Univ. (Sweden); L. Origlia, INAF - Osservatorio di Bologna (Italy); L. Pasquini, J. Paufigue, European Southern Observatory (Germany); N. Piskunov, Uppsala Univ. (Sweden); E. Pozna, European Southern Observatory (Germany); A. Reiners, Georg-August-Univ. Göttingen (Germany); A. Smette, J. Smoker, European Southern Observatory (Germany); U. Seemann, Georg-August-Univ. Göttingen (Germany); E. Stempels, INAF - Osservatorio di Arcetri (Italy); E. Valenti, European Southern Observatory (Germany)
- 9147 7T **HiJaK: the high-resolution J, H and K spectrometer** [9147-291]
P. S. Muirhead, Z. J. Hall, M. J. Veyette, Boston Univ. (United States)

- 9147 7U **Combining vector-phase coronagraphy with dual-beam polarimetry** [9147-293]
F. Snik, G. Otten, M. Kenworthy, Leiden Observatory, Leiden Univ. (Netherlands); D. Mawet, European Southern Observatory (Chile); M. Escuti, North Carolina State Univ. (United States)
- 9147 7V **An atmospheric turbulence and telescope simulator for the development of AOLI** [9147-294]
M. Puga, R. López, Instituto de Astrofísica de Canarias (Spain) and Univ. de La Laguna (Spain); D. King, Univ. of Cambridge (United Kingdom); A. Oscoz, Instituto de Astrofísica de Canarias (Spain) and Univ. de La Laguna (Spain)
- 9147 7W **Stable Imaging for Astronomy (SIA)** [9147-295]
M. Beaulieu, S. Ottogalli, O. Preis, Y. Bresson, J.-P. Rivet, L. Abe, F. Vakili, Univ. de Nice Sophia-Antipolis, Observatoire de la Côte d'Azur, CNRS (France)
- 9147 7X **Adapting a very high resolution echelle spectrograph to an 8 meter class telescope** [9147-297]
R. O. Reynolds, L. Dettmann, Large Binocular Telescope Observatory (United States)
- 9147 7Y **Development of compact and ultra-high-resolution spectrograph with multi-GHz optical frequency comb** [9147-298]
M. Endo, The Univ. of Tokyo (Japan) and Exploratory Research for Advanced Technology (Japan); T. Sukegawa, Canon Inc. (Japan); A. Silva, Y. Kobayashi, The Univ. of Tokyo (Japan) and Exploratory Research for Advanced Technology (Japan)
- 9147 7Z **The habitable-zone planet finder calibration system** [9147-299]
S. Halverson, S. Mahadevan, L. Ramsey, R. Terrien, A. Roy, C. Schwab, C. Bender, F. Hearty, E. Levi, The Pennsylvania State Univ. (United States); S. Osterman, Johns Hopkins Univ. Applied Physics Lab. (United States); G. Ycas, S. Diddams, National Institute of Standards and Technology (United States)
- 9147 80 **A stable and inexpensive wavelength reference for precise wavelength calibration of radial velocity spectrographs** [9147-300]
T. Feger, Macquarie Univ. (Australia); M. J. Ireland, The Australian National Univ. (Australia); J. Bento, C. Bacigalupo, Macquarie Univ. (Australia)
- 9147 81 **Performance modeling of an upgraded NIRSPEC on Keck** [9147-301]
E. C. Martin, M. P. Fitzgerald, I. S. McLean, Univ. of California, Los Angeles (United States); S. M. Adkins, W. M. Keck Observatory (United States); T. Aliado, G. Brims, C. Johnson, K. Magnone, E. Wang, J. Weiss, Univ. of California, Los Angeles (United States)
- 9147 82 **Optical cavity characterization of the Tor Vergata Fabry-Pérot interferometer** [9147-304]
L. Giovannelli, F. Berrilli, D. Del Moro, Univ. degli Studi di Roma "Tor Vergata" (Italy); V. Greco, Istituto Nazionale di Ottica Applicata - CNR (Italy); R. Piazzesi, Univ. degli Studi di Roma "Tor Vergata" (Italy); A. Sordini, Istituto Nazionale di Ottica Applicata - CNR (Italy); M. Stangalini, INAF - Osservatorio Astronomico di Roma (Italy)
- 9147 83 **Gemini planet imager observational calibrations VII: on-sky polarimetric performance of the Gemini planet imager** [9147-305]
S. J. Wiktorowicz, Univ. of California, Santa Cruz (United States); M. Millar-Blanchaer, Univ. of Toronto (Canada); M. D. Perrin, Space Telescope Science Institute (United States);

J. R. Graham, Univ. of California, Berkeley (United States); M. P. Fitzgerald, Univ. of California, Los Angeles (United States); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); P. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Univ. de Montréal (Canada); D. Savransky, Cornell Univ. (United States); B. A. Macintosh, Lawrence Livermore National Lab. (United States) and Stanford Univ. (United States); S. J. Thomas, NASA Ames Research Ctr. (United States); J. K. Chilcote, Univ. of California, Los Angeles (United States); Z. H. Draper, Univ. of Victoria (Canada); I. Song, Univ. of Georgia (United States); A. Cardwell, Gemini Observatory (Chile); S. J. Goodsell, Gemini Observatory (United States); M. Hartung, P. Hibon, F. Rantakyö, N. Sadakuni, Gemini Observatory (Chile)

- 9147 84 **Gemini planet imager observational calibrations V: astrometry and distortion** [9147-306]
 Q. M. Konopacky, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); S. J. Thomas, NASA Ames Research Ctr. (United States); B. A. Macintosh, Stanford Univ. (United States) and Lawrence Livermore National Lab. (United States); D. Dillon, Univ. of California Observatories (United States); N. Sadakuni, Univ. of California Observatories (United States) and Gemini Observatory (Chile); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); M. Fitzgerald, Univ. of California, Los Angeles (United States); S. Hinkley, California Institute of Technology (United States); P. Kalas, Univ. of California, Berkeley (United States); T. Esposito, Univ. of California, Los Angeles (United States); C. Marois, NRC - Dominion Astrophysical Observatory (Canada); P. J. Ingraham, Stanford Univ. (United States); F. Marchis, SETI Institute (United States); M. D. Perrin, Space Telescope Science Institute (United States); J. R. Graham, J. J. Wang, Univ. of California, Berkeley (United States); R. J. De Rosa, Arizona State Univ. (United States) and Univ. of Exeter (United Kingdom); K. Morzinski, Steward Observatory, The Univ. of Arizona (United States); L. Pueyo, Space Telescope Science Institute (United States); J. K. Chilcote, J. E. Larkin, Univ. of California, Los Angeles (United States); D. Fabrycky, The Univ. of Chicago (United States); S. J. Goodsell, Gemini Observatory (Chile); B. R. Oppenheimer, American Museum of Natural History (United States); J. Patience, Arizona State Univ. (United States); L. Saddlemyer, NRC - Dominion Astrophysical Observatory (Canada); A. Sivaramakrishnan, Space Telescope Science Institute (United States)

- 9147 85 **Gemini planet imager observational calibrations VI: photometric and spectroscopic calibration for the integral field spectrograph** [9147-307]
 J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); P. J. Ingraham, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); R. J. De Rosa, Arizona State Univ. (United States) and Univ. of Exeter (United Kingdom); M. D. Perrin, Space Telescope Science Institute (United States); A. Rajan, Arizona State Univ. (United States); D. Savransky, Cornell Univ. (United States); J. J. Wang, Univ. of California, Berkeley (United States); J.-B. Ruffio, SETI Institute (United States); S. G. Wolff, Johns Hopkins Univ. (Canada); J. K. Chilcote, Univ. of California, Los Angeles (United States); R. Doyon, Univ. de Montréal (Canada); J. R. Graham, Univ. of California, Berkeley (United States); A. Z. Greenbaum, Johns Hopkins Univ. (United States); Q. M. Konopacky, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); J. E. Larkin, Univ. of California, Los Angeles (United States); B. A. Macintosh, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States) and Lawrence Livermore National Lab. (United States); C. Marois, NRC - Herzberg Institute of Astrophysics (Canada); M. Millar-Blanchaer, Univ. of Toronto (Canada); J. Patience, Arizona State Univ. (United States); L. A. Pueyo, A. Sivaramakrishnan, Space Telescope Science Institute (United States); S. J. Thomas, NASA Ames Research Ctr. (United States); J. L. Weiss, Univ. of California, Los Angeles (United States)

- 9147 86 **A robotic, compact, and extremely high resolution optical spectrograph for a close-in super-Earth survey** [9147-308]
J. Ge, S. Powell, B. Zhao, F. Varosi, B. Ma, S. Sithajan, J. Liu, R. Li, N. Grieves, S. Schofield, L. Avner, H. Jakeman, W. A. Yoder, J. A. Gittelmacher, M. A. Singer, Univ. of Florida (United States); M. Muterspaugh, M. Williamson, J. E. Maxwell, Tennessee State Univ. (United States)
- 9147 87 **Characterizing instrumental effects on polarization at a Nasmyth focus using NaCo** [9147-309]
J. de Boer, European Southern Observatory (Chile) and Leiden Observatory, Leiden Univ. (Netherlands); J. H. Girard, D. Mawet, European Southern Observatory (Chile); F. Snik, C. U. Keller, Leiden Observatory, Leiden Univ. (Netherlands); J. Milli, European Southern Observatory (Chile) and IPAG, Univ. Joseph Fourier, CNRS (France)

Part Five

- 9147 88 **The upgrade of a high dispersion spectro-polarimeter, VESPolA: new circular polarimetry mode and extremely high resolution mode** [9147-310]
T. Arasaki, Kyoto Sangyo Univ. (Japan); Y. Ikeda, Photocoding (Japan); N. Akika, H. Kawakita, Kyoto Sangyo Univ. (Japan)
- 9147 89 **FIDEOS: a high resolution echelle spectrograph for the ESO 1m telescope at La Silla** [9147-311]
M. Tala, A. Berdja, M. Jones, L. Vanzi, S. Ropert, Pontificia Univ. Católica de Chile (Chile); M. Flores, Univ. de Santiago de Chile (Mexico); C. Viscasillas, Univ. Católica de Avila (Spain)
- 9147 8C **HARPS-N @ TNG, two year harvesting data: performances and results** [9147-314]
R. Cosentino, INAF - Telescopio Nazionale Galileo (Spain); C. Lovis, F. Pepe, Observatoire Astronomique de l'Univ. de Genève (Switzerland); A. C. Cameron, Univ. of St. Andrews (United Kingdom); D. W. Latham, Harvard-Smithsonian Ctr. for Astrophysics (United States); E. Molinari, INAF - Telescopio Nazionale Galileo (Spain); S. Udry, Observatoire Astronomique de l'Univ. de Genève (Switzerland); N. Bezawada, UK Astronomy Technology Ctr. (United Kingdom); N. Buchschacher, Observatoire Astronomique de l'Univ. de Genève (Switzerland); P. Figueira, Natural History Museum of Denmark (Denmark); M. Fleury, Observatoire Astronomique de l'Univ. de Genève (Switzerland); A. Ghedina, INAF - Telescopio Nazionale Galileo (Spain); A. G. Glenday, Harvard-Smithsonian Ctr. for Astrophysics (United States); M. Gonzalez, J. Guerra, INAF - Telescopio Nazionale Galileo (Spain); D. Henry, UK Astronomy Technology Ctr. (United Kingdom); I. Hughes, C. Maire, F. Motalebi, Observatoire Astronomique de l'Univ. de Genève (Switzerland); D. Phillips, Harvard-Smithsonian Ctr. for Astrophysics (United States)
- 9147 8D **Development of infrared echelle spectrograph and mid-infrared heterodyne spectrometer on a small telescope at Haleakala, Hawaii for planetary observation** [9147-315]
T. Sakanoi, Y. Kasaba, M. Kagitani, H. Nakagawa, Tohoku Univ. (Japan); J. Kuhn, S. Okano, Institute for Astronomy, Univ. of Hawai'i (United States)
- 9147 8E **ERIS: the exoplanet high-resolution image simulator for CHARIS** [9147-316]
M. A. Limbach, T. D. Groff, N. J. Kasdin, Princeton Univ. (United States); T. Brandt, Institute for Advanced Studies (United States); K. Mede, The Univ. of Tokyo (Japan); C. Loomis, Princeton Univ. (United States); M. Hayashi, N. Takato, National Astronomical Observatory of Japan (Japan)

- 9147 8F **The solar system at 10 parsec: exploiting the ExAO of LBT in the visual wavelengths** [9147-317]
M. Stangalini, F. Pedichini, M. Centrone, INAF - Osservatorio Astronomico di Roma (Italy); S. Esposito, INAF - Osservatorio Astrofisico di Arcetri (Italy); J. Farinato, INAF - Osservatorio Astronomico di Padova (Italy); E. Giallongo, INAF - Osservatorio Astronomico di Roma (Italy); F. Quirós-Pacheco, E. Pinna, INAF - Osservatorio Astrofisico di Arcetri (Italy)
- 9147 8H **SPRAT: Spectrograph for the Rapid Acquisition of Transients** [9147-319]
A. S. Piascik, I. A. Steele, S. D. Bates, C. J. Mottram, R. J. Smith, R. M. Barnsley, B. Bolton, Liverpool John Moores Univ. (United Kingdom)
- 9147 8I **DIPOL-2: a double image high precision polarimeter** [9147-321]
V. Pirola, A. Berdyugin, Univ. of Turku (Finland); S. Berdyugina, Kiepenheuer-Institut für Sonnenphysik (Germany)
- 9147 8J **H.O.R.S. a new visiting instrument for G.T.C. based on the Utrecht Echelle Spectrograph** [9147-322]
J. Peñate, F. Gracia, C. Allende, J. Calvo, S. Santana, Instituto de Astrofísica de Canarias (Spain)
- 9147 8K **ESPRESSO front end exposure meter: a chromatic approach to radial velocity correction** [9147-323]
M. Landoni, M. Riva, INAF - Osservatorio Astronomico di Brera (Italy); F. Pepe, Observatoire de Genève (Switzerland); P. Conconi, F. M. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); A. Cabral, Univ. de Lisboa (Portugal); S. Cristiani, INAF - Osservatorio Astronomico di Trieste (Italy); D. Megevand, Observatoire de Genève (Switzerland)
- 9147 8L **First calibration and visible wavelength observations of Khayyam: a tunable spatial heterodyne spectroscopy (SHS)** [9147-324]
S. Hosseini, Univ. of California, Davis (United States); W. Harris, The Univ. of Arizona (United States)
- 9147 8M **The metrology system for the multi-object optical and near-infrared spectrograph MOONS** [9147-325]
M. Torres-Torriti, L. Vanzi, R. Dünner, F. Belmar, L. Dauvin, T.-C. Chen, Pontificia Univ. Católica de Chile (Chile); M. Cirasuolo, W. Taylor, H. Schnettler, D. Montgomery, P. Rees, UK Astronomy Technology Ctr. (United Kingdom); A. Cabral, Univ. de Lisboa (Portugal)
- 9147 8N **Green astro-comb for HARPS-N** [9147-326]
N. Langellier, Harvard Univ. (United States); C.-H. Li, A. G. Glenday, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Chang, Massachusetts Institute of Technology (United States) and Hamburg Univ. (Germany); H.-W. Chen, J. Lim, Massachusetts Institute of Technology (United States); G. Furesz, Harvard-Smithsonian Ctr. for Astrophysics (United States); F. Kärtner, Massachusetts Institute of Technology (United States) and Hamburg Univ. (Germany); D. F. Phillips, Harvard-Smithsonian Ctr. for Astrophysics (United States); D. Sasselov, Harvard Univ. (United States) and Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Szentgyorgyi, Harvard-Smithsonian Ctr. for Astrophysics (United States); R. Walsworth, Harvard Univ. (United States) and Harvard-Smithsonian Ctr. for Astrophysics (United States)

- 9147 8O **A coronagraph based on two spatial light modulators for active amplitude apodizing and phase corrections** [9147-328]
J. Dou, Nanjing Institute of Astronomical Optics and Technology (China); D. Ren, Nanjing Institute of Astronomical Optics and Technology (China) and California State Univ., Northridge (United States); X. Zhang, Y. Zhu, G. Zhao, Z. Wu, R. Chen, Nanjing Institute of Astronomical Optics and Technology (China); C. Liu, F. Yang, C. Yang, Nanjing Institute of Astronomical Optics and Technology (China) and Univ. of Chinese Academy of Sciences (China)
- 9147 8P **Novel infrared polarimeter for the ESO CRILES+ instrument** [9147-329]
M. Lockhart, N. Piskunov, E. Stempels, Uppsala Univ. (Sweden); M. Escuti, North Carolina State Univ. (United States); E. Oliva, INAF - Osservatorio Astrofisico di Arcetri (Italy); H.-U. Käufl, European Southern Observatory (Germany); U. Heiter, T. Marquart, Uppsala Univ. (Sweden); G. Anglada-Escude, Georg-August-Univ. Göttingen (Germany); D. Baade, P. Bristow, R. J. Dorn, European Southern Observatory (Germany); R. Follert, Thüringer Landessternwarte Tautenburg (Germany); D. Gojak, J. H. Grunhut, European Southern Observatory (Germany); A. Hatzes, Thüringer Landessternwarte Tautenburg (Germany); M. Hilker, D. Ives, Y. Jung, F. Kerber, B. Klein, J.-L. Lizon, European Southern Observatory (Germany); T. Löwinger, Thüringer Landessternwarte Tautenburg (Germany); L. Origlia, INAF - Osservatorio Astrofisico di Arcetri (Italy); L. Pasquini, J. Paufigue, E. Pozna, European Southern Observatory (Germany); A. Reiners, U. Seemann, Georg-August-Univ. (Germany); A. Smette, J. Smoker, E. Valenti, European Southern Observatory (Germany)
- 9147 8Q **ESPRESSO Coudé-Train: complexities of a simultaneous optical feeding from the four VLT unit telescopes** [9147-330]
A. Cabral, M. Abreu, J. Coelho, R. Gomes, Ctr. de Astronomia e Astrofísica da Univ. de Lisboa (Portugal); M. Monteiro, Ctr. de Astrofísica da Univ. do Porto (Portugal); A. Oliveira, P. Santos, Univ. de Lisboa (Portugal); G. Ávila, B.-A. Delabre, European Southern Observatory (Germany); M. Riva, INAF - Osservatorio Astronomico di Brera (Italy); P. Di Marcantonio, I. Coretti, INAF - Osservatorio Astronomico di Trieste (Italy); N. C. Santos, Univ. de Lisboa (Portugal) and Univ. do Porto (Portugal); F. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); D. Mégevand, Observatoire de l'Univ. de Genève (Switzerland)
- 9147 8R **Fast multichannel astronomical photometer based on silicon photo multipliers mounted at the Telescopio Nazionale Galileo** [9147-371]
F. Ambrosino, F. Meddi, C. Rossi, S. Sclavi, Univ. degli Studi di Roma La Sapienza (Italy); R. Nesci, INAF - Istituto di Astrofisica e Planetologia Spaziali (Italy); I. Bruni, INAF - Osservatorio Astronomico di Bologna (Italy); A. Ghedina, L. Riverol, L. Di Fabrizio, INAF - Fundación Galileo Galilei (Spain)
- 9147 8S **Photometric study of the Paranal observatory using MASS database** [9147-373]
A. Abahamid, Univ. Cadi Ayyad (Morocco); M. Sarazin, European Southern Observatory (Germany); G. Lombardi, European Southern Observatory (Chile)
- 9147 8T **First performance of the GeMS+GMOS system** [9147-65]
P. Hibon, Gemini South Observatory (Chile); B. Neichel, Lab. d'Astrophysique de Marseille (France); V. Garrel, Gemini South Observatory (Chile); B. Prout, F. Rigaut, The Australian National Univ. (Australia); A. Koning, Univ. of Victoria (Canada); G. Sivo, G. Gimeno, R. Carrasco, C. Winge, P. Pessev, A. Serio, G. Arriagada, Gemini South Observatory (Chile)

POSTER SESSION: EXTREMELY LARGE TELESCOPES AND INSTRUMENTS

- 9147 8U **Design and analysis of a large-diameter precision optical mount for NFIRAOS** [9147-303]
J. Fitzsimmons, A. Hill, National Research Council Canada (Canada)
- 9147 8V **HARMONI instrument control electronics** [9147-331]
J. V. Gigante, L. F. Rodríguez, Instituto de Astrofísica de Canarias (Spain); G. Zins, Institut de Planétologie et d'Astrophysique de Grenoble (France); H. Schnettler, UK Astronomy Technology Ctr. (United Kingdom); A. Pecontal, Ctr. de Recherche Astrophysique de Lyon (France); J. M. Herreros, Instituto de Astrofísica de Canarias (Spain); F. Clarke, Univ. of Oxford (United Kingdom); I. Bryson, UK Astronomy Technology Ctr. (United Kingdom); N. Thatte, Univ. of Oxford (United Kingdom)
- 9147 8W **A novel systems engineering approach to the design of a precision radial velocity spectrograph: the GMT-Consortium Large Earth Finder (G-CLEF)** [9147-333]
W. Podgorski, Harvard-Smithsonian Ctr. for Astrophysics (United States); J. Bean, The Univ. of Chicago (United States); H. Bergner, Harvard-Smithsonian Ctr. for Astrophysics (United States); M.-Y. Chun, Korea Astronomy and Space Science Institute (Korea, Republic of); J. Crane, Carnegie Observatories (United States); I. Evans, J. Evans, G. Furesz, Harvard-Smithsonian Ctr. for Astrophysics (United States); D. Guzman, Pontificia Univ. Católica de Chile (Chile); K.-M. Kim, Korea Astronomy and Space Science Institute (Korea, Republic of); K. McCracken, M. Mueller, T. Norton, Harvard-Smithsonian Ctr. for Astrophysics (United States); C. Park, Korea Astronomy and Space Science Institute (Korea, Republic of); S. Park, D. Plummer, A. Szentgyorgyi, Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Uomoto, Carnegie Observatories (United States); I.-S. Yuk, Korea Astronomy and Space Science Institute (Korea, Republic of)
- 9147 8X **The infrared imaging spectrograph (IRIS) for TMT: volume phase holographic grating performance testing and discussion** [9147-334]
S. Chen, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); E. Meyer, S. A. Wright, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Canada); A. M. Moore, Caltech Optical Observatories (United States); J. E. Larkin, Univ. of California, Los Angeles (United States); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); E. Mieda, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Canada); L. Simard, NRC - Dominion Astrophysical Observatory (Canada)
- 9147 8Y **Development of a subwavelength grating vortex coronagraph of topological charge 4 (SGVC4)** [9147-335]
C. Delacroix, O. Absil, B. Carlomagno, P. Piron, Univ. de Liège (Belgium); P. Forsberg, M. Karlsson, Uppsala Univ. (Sweden); D. Mawet, European Southern Observatory (Chile); S. Habraken, J. Surdej, Univ. de Liège (Belgium)
- 9147 8Z **Integral field spectroscopy of high redshift galaxies with the HARMONI spectrograph on the European Extremely Large Telescope** [9147-336]
S. Kendrew, S. Zieleniewski, N. Thatte, J. Devriendt, R. Houghton, Univ. of Oxford (United Kingdom); T. Fusco, ONERA (France); M. Tecza, F. Clarke, K. O'Brien, Univ. of Oxford (United Kingdom)

- 9147 90 **Trade-off study for high resolution spectroscopy in the near infrared with ELT telescopes: seeing-limited vs. diffraction limited instruments** [9147-337]
N. Sanna, E. Oliva, F. Massi, G. Cresci, INAF - Osservatorio Astrofisico di Arcetri (Italy);
L. Origlia, INAF - Osservatorio Astronomico di Bologna (Italy)
- 9147 91 **Simulations of high-z galaxy observations with an ELT-MOS** [9147-338]
K. Disseau, M. Puech, H. Flores, F. Hammer, Y. Yang, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); L. Pentericci, INAF - Osservatorio Astronomico di Roma (Italy)
- 9147 92 **All-sky homogeneity of precipitable water vapour over Paranal** [9147-339]
R. R. Querel, National Institute of Water and Atmospheric Research (New Zealand) and Univ. de Chile (Chile); F. Kerber, European Southern Observatory (Germany)
- 9147 93 **Simulating observations with HARMONI: the integral field spectrograph for the European Extremely Large Telescope** [9147-340]
S. Zieleniewski, N. Thatte, S. Kendrew, R. Houghton, M. Tecza, F. Clarke, Univ. of Oxford (United Kingdom); T. Fusco, ONERA (France); M. Swinbank, Durham Univ. (United Kingdom)
- 9147 94 **The MANIFEST fibre positioning system for the Giant Magellan Telescope** [9147-341]
J. S. Lawrence, D. M. Brown, J. Brzeski, S. Case, Australian Astronomical Observatory (Australia); M. Colless, The Australian National Univ. (Australia); T. Farrell, L. Gers, J. Gilbert, M. Goodwin, Australian Astronomical Observatory (Australia); G. Jacoby, Giant Magellan Telescope (United States) and Carnegie Observatories (United States); A. M. Hopkins, M. Ireland, K. Kuehn, N. P. F. Lorente, S. Miziaski, R. Muller, V. Nichani, A. Rakman, Australian Astronomical Observatory (Australia); S. Richards, The Univ. of Sydney (Australia); W. Saunders, N. F. Staszak, J. Tims, M. Vuong, L. Waller, Australian Astronomical Observatory (Australia)
- 9147 95 **A mechanical design concept for EAGLE on the revised E-ELT** [9147-342]
C. M. Dubbeldam, Durham Univ. (United Kingdom)
- 9147 96 **Science case and requirements for the MOSAIC concept for a multi-object spectrograph for the European Extremely Large Telescope** [9147-343]
C. J. Evans, UK Astronomy Technology Ctr. (United Kingdom); M. Puech, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); B. Barbuy, Univ. de São Paulo (Brazil); P. Bonifacio, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); J.-G. Cuby, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); E. Guenther, Thüringer Landessternwarte Tautenburg (Germany); F. Hammer, P. Jagourel, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); L. Kaper, Univ. van Amsterdam (Netherlands); S. L. Morris, Durham Univ. (United Kingdom); J. Afonso, Observatório Astronómico de Lisboa (Portugal); P. Amram, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); H. Aussel, CEA, AIM, Service d'Astrophysique (France); A. Basden, Durham Univ. (United Kingdom); N. Bastian, Liverpool John Moores Univ. (United Kingdom); G. Battaglia, Instituto de Astrofísica de Canarias (Spain); B. Biller, The Royal Observatory, Edinburgh (United Kingdom); N. Bouché, Univ. de Toulouse, UPS-OMP, CNRS (France); E. Caffau, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); S. Charlot, UPMC-CNRS, Institut d'Astrophysique de Paris (France); Y. Clenet, LESIA, Observatoire de Paris, CNRS-UPMC, Univ. Paris-Diderot (France); F. Combes, LERMA, Observatoire de Paris, CNRS (France); C. Conselice, The Univ. of Nottingham (United Kingdom); T. Contini, Univ. de Toulouse, UPS-OMP, CNRS (France); G. Dalton, Univ. of Oxford (United Kingdom) and Rutherford Appleton Lab. (United Kingdom); B. Davies, Liverpool John Moores Univ. (United States); K. Disseau, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); J. Dunlop, The

Royal Observatory, Edinburgh (United Kingdom); F. Fiore, INAF - Osservatorio Astronomico di Roma (Italy); H. Flores, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); T. Fusco, ONERA (France); D. Gadotti, European Southern Observatory (Chile); A. Gallazzi, INAF - Osservatorio Astrofisico di Arcetri (Italy); E. Giallongo, INAF - Osservatorio Astronomico di Roma (Italy); T. Gonçalves, Observatório do Valongo (Brazil); D. Gratadour, LESIA, Observatoire de Paris, CNRS-UPMC, Univ. Paris-Diderot (France); V. Hill, Observatoire de la Côte d'Azur (France); M. Huertas-Company, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); R. Ibata, Observatoire de Strasbourg (France); S. Larsen, Radboud Univ. Nijmegen (Netherlands); O. Le Fèvre, Aix Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); B. Lemasle, Univ. von Amsterdam (Netherlands); C. Maraston, Univ. of Portsmouth (United Kingdom); S. Mei, GEPI, Observatoire de Paris, CNRS, Univ. Paris Diderot (France); Y. Mellier, UPMC-CNRS, Institut d'Astrophysique de Paris (France); G. Östlin, Stockholm Univ. (Sweden); T. Paumard, LESIA, Observatoire de Paris, CNRS-UPMC, Univ. Paris-Diderot (France); R. Pello, Univ. de Toulouse, UPS-OMP, CNRS (France); L. Pentericci, INAF - Osservatorio Astronomico di Roma (Italy); P. Petitjean, UPMC-CNRS, Institut d'Astrophysique de Paris (France); M. Roth, Leibniz-Institut für Astrophysik Potsdam (Germany); D. Rouan, LESIA, Observatoire de Paris, CNRS-UPMC, Univ. Paris-Diderot (France); D. Schaerer, Observatoire de Genève, Univ. de Genève (Switzerland); E. Telles, Observatorio Nacional (Brazil); S. Trager, Univ. of Groningen (Netherlands); N. Welikala, Univ. of Oxford (United Kingdom); S. Zibetti, INAF - Osservatorio Astrofisico di Arcetri (Italy); B. Ziegler, Univ. Wien (Austria)

- 9147 97 **The spectrograph units for the HARMONI integral field spectrograph** [9147-344]
K. O'Brien, J. R. Allen, J. D. Lynn, N. A. Thatte, Univ. of Oxford (United Kingdom); I. Bryson, UK Astronomy Technology Ctr. (United Kingdom); F. Clarke, Univ. of Oxford (United Kingdom); H. Schnettler, UK Astronomy Technology Ctr. (United Kingdom); M. Tecza, Univ. of Oxford (United Kingdom)
- 9147 99 **Mid-IR AGPMs for ELT applications** [9147-346]
B. Carlomagno, C. Delacroix, O. Absil, Univ. de Liège (Belgium); P. Forsberg, Uppsala Univ. (Sweden); S. Habraken, A. Jolivet, Univ. de Liège (Belgium); M. Karlsson, Uppsala Univ. (Sweden); D. Mawet, European Southern Observatory (Chile); P. Piron, J. Surdej, Univ. de Liège (Belgium); E. Vargas Catalan, Uppsala Univ. (Sweden)
- 9147 9A **The opto-mechanical design of the GMT-consortium large earth finder (G-CLEF)** [9147-347]
M. Mueller, D. Baldwin, Harvard-Smithsonian Ctr. for Astrophysics (United States); J. Bean, The Univ. of Chicago (United States); H. Bergner, Harvard-Smithsonian Ctr. for Astrophysics (United States); B. Bigelow, GMTO Corp. (United States); M.-Y. Chun, Korea Astronomy and Space Science Institute (Korea, Republic of); J. Crane, Carnegie Observatories (United States); J. Foster, G. Fűrész, T. Gauron, Harvard-Smithsonian Ctr. for Astrophysics (United States); D. Guzman, Pontificia Univ. Católica de Chile (Chile); E. Hertz, Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Jordán, Pontificia Univ. Católica de Chile (Chile); K.-M. Kim, Korea Astronomy and Space Science Institute (Korea, Republic of); K. McCracken, T. Norton, M. Ordway, Harvard-Smithsonian Ctr. for Astrophysics (United States); C. Park, Korea Astronomy and Space Science Institute (Korea, Republic of); S. Park, W. Podgorski, A. Szentgyorgyi, Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Uomoto, Carnegie Observatories (United States); I.-S. Yuk, Korea Astronomy and Space Science Institute (Korea, Republic of)

- 9147 9B **SKA pulsar search: technological challenges and best algorithms development** [9147-348]
C. Baffa, INAF - Osservatorio Astrofisico di Arcetri (Italy)
- 9147 9C **The infrared imaging spectrograph (IRIS) for TMT: reflective ruled diffraction grating performance testing and discussion** [9147-349]
E. Meyer, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Canada); S. Chen, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); S. A. Wright, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Cambodia); A. M. Moore, Caltech Optical Observatories (United States); J. E. Larkin, Univ. of California, Los Angeles (United States); L. Simard, NRC – Dominion Astrophysical Observatory (Canada); J. Maire, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); E. Mieda, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Canada); J. Gordon, Univ. of Toronto (Canada)
- 9147 9D **Three possible types of coronagraphs for the E-ELT PCS instrument** [9147-350]
A. Carlotti, IPAG, CNRS (France); M. N'Diaye, L. Pueyo, Space Telescope Science Institute (United States); D. Mawet, European Southern Observatory (Chile)
- 9147 9E **The high contrast imaging modes of MICADO** [9147-351]
P. Baudoz, A. Boccaletti, S. Lacour, R. Galicher, Y. Clénet, D. Gratadour, É. Gendron, T. Buey, G. Rousset, Lab. d'Etudes Spatiales et d'Instrumentation en Astrophysique, Observatoire de Paris-Meudon (France); M. Hartl, R. Davies, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 9147 9F **An aperture masking mode for the MICADO instrument** [9147-352]
S. Lacour, P. Baudoz, E. Gendron, A. Boccaletti, R. Galicher, Y. Clénet, D. Gratadour, T. Buey, G. Rousset, LESIA, Observatoire de Paris (France); M. Hartl, R. Davies, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 9147 9G **The G-CLEF spectrograph optical design** [9147-353]
G. Fűrész, Harvard-Smithsonian Ctr. for Astrophysics (United States); H. Epps, Univ. of California Observatories, Lick Observatory (United States) and Univ. of California Santa Cruz (United States); S. Barnes, Stuart Barnes Optical Design (Netherlands); W. Podgorski, A. Szentgyorgyi, M. Mueller, D. Baldwin, Harvard-Smithsonian Ctr. for Astrophysics (United States); J. Bean, The Univ. of Chicago (United States); H. Bergner, Harvard-Smithsonian Ctr. for Astrophysics (United States); M.-Y. Chun, Korea Astronomy and Space Science Institute (Korea, Republic of); J. Crane, Carnegie Observatories (United States); J. Evans, I. Evans, J. Foster, T. Gauron, Harvard-Smithsonian Ctr. for Astrophysics (United States); D. Guzman, Pontificia Univ. Católica de Chile (Chile); E. Hertz, Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Jordán, Pontificia Univ. Católica de Chile (Chile); K.-M. Kim, Korea Astronomy and Space Science Institute (Korea, Republic of); K. McCracken, T. Norton, M. Ordway, Harvard-Smithsonian Ctr. for Astrophysics (United States); C. Park, Korea Astronomy and Space Science Institute (Korea, Republic of); S. Park, D. Plummer, Harvard-Smithsonian Ctr. for Astrophysics (United States); A. Uomoto, Carnegie Observatories (United States); I.-S. Yuk, Korea Astronomy and Space Science Institute (Korea, Republic of)
- 9147 9H **On-instrument wavefront sensor design for the TMT infrared imaging spectrograph (IRIS) update** [9147-354]
J. Dunn, V. Reshetov, J. Atwood, J. Pazder, B. Wooff, D. Loop, L. Saddlemyer, NRC - Herzberg Institute of Astrophysics (Canada); A. M. Moore, Caltech Optical Observatories (United States); J. E. Larkin, Univ. of California, Los Angeles (United States)

- 9147 9I **DKIST visible broadband imager interference filters** [9147-355]
F. Wöger, National Solar Observatory (United States)
- 9147 9J **Optical and mechanical design of the fore-optics of HARMONI** [9147-356]
J. Sánchez-Capuchino, E. Hernández, A. Bueno, J. M. Herreros, Instituto de Astrofísica de Canarias (Spain); N. Thatte, Univ. of Oxford (United Kingdom); I. Bryson, UK Astronomy Technology Ctr. (United Kingdom); F. Clarke, M. Tecza, Univ. of Oxford (United Kingdom)
- 9147 9K **Beating the heat! Automated characterization of piezoelectric tubes for Starbugs** [9147-357]
R. Piersiak, Stony Brook Univ. (United States); M. Goodwin, J. Gilbert, R. Muller, Australian Astronomical Observatory (Australia)
- 9147 9L **Wireless software update system based on Zigbee for LAMOST** [9147-358]
S. Li, Y. Gu, Y. Jin, C. Zhai, Univ. of Science and Technology of China (China)
- 9147 9M **Cryogenic testing of components for the HARMONI spectrograph** [9147-359]
J. R. Allen, K. O'Brien, J. D. Lynn, N. A. Thatte, Univ. of Oxford (United Kingdom); I. Bryson, UK Astronomy Technology Ctr. (United Kingdom); F. Clarke, Univ. of Oxford (United Kingdom); H. Schnetler, UK Astronomy Technology Ctr. (United Kingdom); M. Tecza, Univ. of Oxford (United Kingdom)
- 9147 9N **The fiber-fed preslit of GIANO at T.N.G.** [9147-360]
A. Tozzi, E. Oliva, INAF - Osservatorio Astrofisico di Arcetri (Italy); L. Origlia, INAF - Osservatorio Astronomico di Bologna (Italy); C. Baffa, V. Biliotti, G. Falcini, E. Giani, M. Iuzzolino, F. Massi, N. Sanna, INAF - Osservatorio Astrofisico di Arcetri (Italy); S. Scuderi, INAF - Osservatorio Astrofisico di Catania (Italy); M. Sozzi, INAF - Osservatorio Astrofisico di Arcetri (Italy)
- 9147 9O **Simultaneous phase and amplitude retrieval with COFFEE: from theory to laboratory results** [9147-363]
B. Paul, ONERA (France), Lab. d'Astrophysique de Marseille, Univ. Aix-Marseille, CNRS (France), and PHASE, Observatoire de Paris, CNRS, Univ. Diderot (France); J.-F. Sauvage, L. M. Mugnier, ONERA (France) and PHASE, Observatoire de Paris, CNRS, Univ. Diderot (France); K. Dohlen, Lab. d'Astrophysique de Marseille, Univ. Aix-Marseille, CNRS (France) and PHASE, Observatoire de Paris, CNRS, Univ. Diderot (France); T. Fusco, ONERA (France), Lab. d'Astrophysique de Marseille, Univ. Aix-Marseille, CNRS (France), and PHASE, Observatoire de Paris, CNRS, Univ. Diderot (France); M. Ferrari, Lab. d'Astrophysique de Marseille, Univ. Aix-Marseille, CNRS (France) and PHASE, Observatoire de Paris, CNRS, Univ. Diderot (France)
- 9147 9P **Infrared differential imager and spectrograph for SPHERE: performance assessment for on-sky operation** [9147-365]
M. Langlois, Ctr. de Recherche Astronomique de Lyon, Observatoire de Lyon, CNRS, Univ. de Lyon 1 (France) and Ecole Normale Supérieure de Lyon (France); A. Vigan, K. Dohlen, C. Moutou, Aix-Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); J.-L. Beuzit, Institut de Planétologie et d'Astrophysique de Grenoble (France); A. Boccaletti, LESIA, Observatoire de Paris (France); M. Carle, A. Costille, Aix-Marseille Univ., CNRS, Lab. d'Astrophysique de Marseille (France); R. Dorn, European Southern Observatory (Germany); L. Gluck, Institut de Planétologie et d'Astrophysique de Grenoble (France);

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9147 9Q **Fully cryogenic phased array prototype camera for the Arecibo radio telescope** [9147-366]
G. Cortes-Medellin, A. Vishwas, S. C. Parshley, D. B. Campbell, Cornell Univ. (United States)

9147 9R **LOTUCE2: a dome-seeing instrument for the E-ELT** [9147-367]
A. Berdja, D. Guzman, N. Saez, N. David, N. Dubost, Pontificia Univ. Católica de Chile (Chile); M. Sarazin, European Southern Observatory (Germany); A. Ziad, Lab. J.L. Lagrange, Univ. Nice Sophia-Antipolis, CNRS, OCA (France)

9147 9S **The infrared imaging spectrograph (IRIS) for TMT: overview of innovative science programs** [9147-369]
S. A. Wright, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada) and Univ. of Toronto (Canada); J. E. Larkin, Univ. of California, Los Angeles (United States); A. M. Moore, Caltech Optical Observatories (United States); T. Do, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto (Canada); L. Simard, NRC - Herzberg Institute of Astrophysics (Canada); M. Adamkovics, Univ. of California, Berkeley (United States); L. Armus, California Institute of Technology (United States); A. J. Barth, E. Barton, Univ. of California, Irvine (United States); H. Boyce, Dunlap Institute for Astronomy and Astrophysics, Univ. of Toronto, (Canada) and Univ. of Saskatchewan (Canada); J. Cooke, Swinburne Univ. of Technology (Australia); P. Cote, T. Davidge, NRC - Herzberg Institute of Astrophysics (Canada); B. Ellerbroek, Thirty Meter Telescope Observatory Corp. (United States); A. Ghez, Univ. of California, Los Angeles (United States); M. C. Liu, J. R. Lu, Institute for Astronomy, Univ. of Hawai'i (United States); B. A. Macintosh, Stanford Univ. (United States); S. Mao, National Astronomical Observatories (China); C. Marois, NRC - Herzberg Institute of Astrophysics (Canada); M. Schoeck, Thirty Meter Telescope Observatory Corp. (United States); R. Suzuki, National Astronomical Observatory of Japan (Japan); J. C. Tan, Univ. of Florida (United States); T. Treu, Univ. of California, Santa Barbara (United States); L. Wang, Thirty Meter Telescope Observatory Corp. (United States); J. Weiss, Univ. of California, Los Angeles (United States)

9147 9T **Drift scanning technique for mid-infrared background subtraction** [9147-372]
S. Heikamp, B. R. Brandl, C. U. Keller, Leiden Observatory (Netherlands); L. Venema, ASTRON (Netherlands); E. Pantin, CEA-Ctr. de SACLAY (France); R. Siebenmorgen, D. Ives, F. Kerber, European Southern Observatory (Germany)

Author Index

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Session Chairs

- 1 Instrument Programs at Major Observatories
Hideki Takami, Subaru Telescope, National Astronomical Observatory of Japan (United States)
- 2 New Instruments and Upgrades to Existing Instruments
Oskar von der Lühe, Kiepenheuer-Institut für Sonnenphysik (Germany)
- 3 High Multiplex and Survey Instruments I
Stephen S. Eikenberry, University of Florida (United States)
- 4 High Multiplex and Survey Instruments II
Ian S. McLean, University of California, Los Angeles (United States)

- 5 High Multiplex and Survey Instruments III
Julia J. Bryant, The University of Sydney (Australia)
- 6 High Spectral Resolution Instruments I
Suzanne K. Ramsay, European Southern Observatory (Germany)
- 7 High Spectral Resolution Instruments II
Ramón J. García López, Instituto de Astrofísica de Canarias (Spain)
- 8 High Spatial Resolution Instruments I
Hideki Takami, Subaru Telescope, National Astronomical Observatory of Japan (United States)
- 9 High Spatial Resolution Instruments II
Maureen L. Savage, SOFIA / USRA (United States)
- 10 Instruments for Extremely Large Telescopes
Luc Simard, National Research Council Canada (Canada)

Introduction

This conference, the fifth in the series on Ground-based and Airborne Instrumentation for Astronomy, attracted a very rich programme of papers discussing all aspects of the design and delivery of complete instrument systems. The range of innovation in the instrument building community was particularly remarkable at this meeting. Instrument concepts matched to the $\sim 1000\text{m}^2$ collecting area of the extremely large telescopes were discussed alongside highly scientifically focused instruments for telescopes with $\sim 1\text{m}^2$ apertures. Meanwhile, the current large telescope observatories are considering their instrument suites in the light of future new developments. Survey instruments are becoming an enduring and significant theme at our meeting, whether designed for observing hundreds of galaxies, or hundreds of points on a radial velocity curve to reveal exo-planetary systems.

At this meeting, ~ 350 papers were presented, either as oral or poster contributions. Six invited reviews were requested on major existing facilities or planned new ones. The presentations were arranged into 10 sessions over the five days of the meeting. The major topics were:

- Instrument Programmes at Major Observatories
- New instruments and Upgrades to Existing Instruments
- High Multiplex and Survey Instruments
- High Spectral Resolution Instruments
- High Spatial Resolution Instruments
- Instruments for Extremely Large Telescopes

On behalf of the program committee, it is a pleasure to acknowledge the contribution of all participants in making this a busy and very productive meeting.

Suzanne K. Ramsay
Hideki Takami
Ian S. McLean