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Eli Atad-Ettedgui
Dietrich Lemke
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- 7739 24 **Characterising modal noise in fibre-coupled spectrographs for astronomy** [7739-194]
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- 7739 2H **Structural analysis of a new type lightweight optical mirror blank** [7739-109]
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- 7739 2L **Recent achievements with a cryogenic ultra-lightweighted HB-Cesic mirror** [7739-115]
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- 7739 2R **A method of 3D reconstruction based on single camera** [7739-122]
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- 7739 30 **An innovative low-cost antenna dish built with commercial off-the-shelf (COTS) components** [7739-136]
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- 7739 31 **The VST active primary mirror support system** [7739-137]
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- 7739 32 **Performance of the VST secondary mirror support system** [7739-138]
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- 7739 33 **The axial actuators for the VST primary mirror** [7739-139]
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- 7739 35 **Thermal behavior of the Medicina 32-meter radio telescope** [7739-141]
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- 7739 36 **Fast force actuators for LSST primary/tertiary mirror** [7739-143]
E. Hileman, National Optical Astronomy Observatory (United States); M. Warner, Cerro Tololo Inter-American Observatory (Chile); O. Wiecha, National Optical Astronomy Observatory (United States)
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A. Busatta, L. Ghedin, G. Marchiori, S. Mian, European Industrial Engineering s.r.l. (Italy); I. Payne, New Mexico Institute of Mining and Technology, Magdalena Ridge Observatory (United States); M. Pozzobon, European Industrial Engineering s.r.l. (Italy)

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- 7739 39 **Toward high-dynamic active mirrors for LGS refocusing systems** [7739-148]
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- 7739 3D **Upgrading the controller of the fast tip-tilt tertiary mirror for the SOAR Telescope** [7739-153]
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J. L. Lizon, European Southern Observatory (Germany)
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J. L. Lizon, European Southern Observatory (Germany)
- 7739 3H **A hybrid liquid nitrogen system for the cooling of the ESO OmegaCAM detector** [7739-157]
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- 7739 3J **First concept for the E-ELT cryogenic infrastructure** [7739-159]
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- 7739 3K **An optical shutter for the Euclid imager** [7739-161]
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- 7739 3L **Large format filter changer mechanism for the Dark Energy Survey** [7739-162]
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- 7739 3M **Assembly of the Dark Energy Survey CCD Imager** [7739-163]
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- 7739 3N **Cooling the Dark Energy Camera CCD array using a closed-loop two-phase liquid nitrogen system** [7739-164]
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- 7739 3Q **Prototyping and testing of mechanical components for the GRAVITY spectrometers** [7739-170]
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- 7739 3T **Optomechanical system of AIT tools to perform tests and integrations of 24 IFU** [7739-174]
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- 7739 3U **Progress in the fabrication of a prototype ZnSe immersion grating for the WINERED spectrograph** [7739-175]
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- 7739 3W **ESPRESSO: design and analysis of Coudé-Train concepts for stable and efficient optical feeding** [7739-178]
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K. D. Fourspring, Z. Ninkov, J. P. Kerekes, Rochester Institute of Technology (United States)

POSTER SESSION: COATINGS/FILTERS/CLEANING/MASKS

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- 7739 3Z **Cleaning the Southern African Large Telescope's M5 mirror** [7739-182]
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- 7739 40 **Blocking filters with enhanced throughput for x-ray microcalorimetry** [7739-184]
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- 7739 42 **Pass-band filter performance for space-flight Dark Energy missions** [7739-186]
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- 7739 44 **Development of five multifibre links for the OPTIMOS-EVE study for the E-ELT** [7739-188]
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- 7739 46 **Multi-way optical fibre connectors for astronomy** [7739-190]
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- 7739 47 **New scramblers for precision radial velocity: square and octagonal fibers** [7739-191]
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F. Bouchy, Institut d'Astrophysique de Paris, CNRS, Univ. Pierre & Marie Curie (France) and
Observatoire de Haute-Provence, CNRS/OAMP, St. Michel l'Observatoire (France);
S. Perruchot, Observatoire de Haute-Provence, CNRS/OAMP, St. Michel l'Observatoire
(France); G. Avila, European Southern Observatory (Germany)
- 7739 48 **The ADC for the VST Telescope: theory and preliminary test of the electromechanical system**
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P. Schipani, INAF, Osservatorio Astronomico di Capodimonte (Italy); J. Farinato, INAF,
Osservatorio Astronomico di Padova (Italy); C. Arcidiacono, INAF, Osservatorio Astrofisico di
Arcetri (Italy); S. D'Orsi, L. Ferragina, D. Fierro, INAF, VSTCeN (Italy); D. Magrin, INAF,
Osservatorio Astronomico di Padova (Italy); L. Marty, INAF, VSTCeN (Italy); F. Perrotta, INAF,
Osservatorio Astronomico di Capodimonte (Italy); R. Ragazzoni, INAF, Osservatorio
Astronomico di Padova (Italy); G. Umbrico, INAF, Univ. degli Studi di Padova (Italy)

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Introduction

Astronomy is driven by the desire to understand our position in the universe, and by new technology.

For almost forty years, SPIE has organized conferences on astronomical telescopes and instrumentation. These events eventually became huge symposia with specialized parallel conferences on all major instrumental areas, such as space- and ground-based telescopes, detectors, interferometers, and adaptive optics. With the increasing complexity of the instrumentation; however, a further conference dedicated to the enabling technologies became necessary. This conference "Modern Technologies in Space- and Ground-based Telescopes and Instrumentation" was held for the first time in 2002 as part of the SPIE symposium of several conferences on astronomical telescopes and instrumentation, attended by ~ 2000 scientists and technicians. While the first two of these new technology-conferences started off with 47 and 79 contributions, respectively, the number of papers has increased to ~ 200 at this fifth conference. Six full days were necessary to schedule about half of the submitted contributions for oral presentations; the rest were posters. Several participants felt somewhat exhausted after a full conference week, which started early on a Sunday morning. The readers of these proceedings are in a more comfortable position: they can take their time to study the interesting and well written contributions from scientists and technicians from laboratories all over the world. However, they will of course miss out on the pleasure of listening to the number of committed speakers, and they cannot ask questions in real time.

This volume documents the impressive progress made in the technical preparation for the extremely large telescopes on both sides of the Atlantic since the 2008 meeting. The first large mirror segment for the Giant Magellan Telescope GMT was presented, including the alignment and test strategy for this 8m-off-axis giant. A first series of the 1.4m-hexagon segments for the 42m European counterpart E-ELT, made of different materials, proved that ESO and the European industry are ready to start building this giant telescope. Even "old" mirror materials such as Zerodur are good for a surprise. Its mechanical strength could recently be improved and measured to be nearly an order of magnitude higher than listed so far. This enables the manufacturing of "superlightweight" glass ceramic mirrors of only ~15% the mass of a full blank.

"Astrophotonics" was another major topic of this conference. With its novel devices such as starbugs, miniature spectrographs in multi-objects spectroscopy, array waveguide gratings, fiber Bragg and VPH gratings, it will revolutionize astronomy and reduce the size, mass, and cost of the next generation of instruments.

But sometimes progress at one front means a disaster at another: The modern closed cycle coolers for the large infrared instruments at the Very Large Telescope VLT have displayed a vibration level which is unacceptable for the operation of interferometers at the VLT- I. The solutions of the "vibration war" presented here look like an apparent, but sophisticated step backwards to Linde's good old liquid nitrogen.

We hope that the readers will find reading these proceedings exciting, and that they will stimulate ideas for their own research.

We look forward to seeing you at the next conference on "Modern Technologies..." in Amsterdam in the summer of 2012.

Eli Atad-Ettedgui
Dietrich Lemke