PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 6689

, "Front Matter: Volume 6689," Proc. SPIE 6689, Solar Physics and Space Weather Instrumentation II, 668901 (26 October 2007); doi: 10.1117/12.759511

SPIE.

Event: Optical Engineering + Applications, 2007, San Diego, California, United States

PROCEEDINGS OF SPIE

Solar Physics and Space Weather Instrumentation II

**Silvano Fineschi
Rodney A. Viereck**
Editors

**26–27 August 2007
San Diego, California, USA**

Sponsored and Published by
SPIE

Volume 6689

Proceedings of SPIE, 0277-786X, v. 6689

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Solar Physics and Space Weather Instrumentation II*, edited by Silvano Fineschi, Rodney A. Viereck, Proceedings of SPIE Vol. 6689 (SPIE, Bellingham, WA, 2007) Article CID Number.

ISSN 0277-786X

ISBN 9780819468376

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2007, Society of Photo-Optical Instrumentation Engineers

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/07/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc.

The CID number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.

Contents

vii *Conference Committee*

SESSION 1 THE STEREO MISSION

- 6689 02 **The SECCHI experiment on STEREO** [6689-37]
J. S. Newmark, J. W. Cook, J. D. Moses, Naval Research Lab. (USA)
- 6689 05 **The STEREO SECCHI/EUVI EUV coronal imager** [6689-40]
J.-P. Wülser, J. R. Lemen, N. Nitta, Lockheed Martin Solar and Astrophysics Lab. (USA)
- 6689 06 **STEREO: Heliospheric Imager design, pre-flight, and in-flight response comparison** [6689-02]
J.-P. Halain, E. Mazy, J.-M. Defise, A. Mazzoli, P. Rochus, Ctr. Spatial de Liège (Belgium);
J. D. Moses, J. S. Newmark, C. Korendyke, R. Howard, S. Plunkett, Naval Research Lab.
(USA); C. Eyles, Rutherford Appleton Lab. (United Kingdom), Univ. de Valencia (Spain), and
Univ. of Birmingham (United Kingdom); R. Harrison, C. Davis, Rutherford Appleton Lab.
(United Kingdom)
- 6689 07 **In-orbit verification, calibration, and performance of the Heliospheric Imager on the STEREO mission** [6689-03]
C. Eyles, Rutherford Appleton Lab. (United Kingdom), Univ. de Valencia (Spain), and Univ.
of Birmingham (United Kingdom); C. Davis, R. Harrison, N. Waltham, Rutherford Appleton
Lab. (United Kingdom); J.-P. Halain, E. Mazy, J.-M. Defise, Univ. de Liège (Belgium);
R. Howard, D. Moses, J. Newmark, S. Plunkett, Naval Research Lab. (USA)
- 6689 08 **Design, development, and performance of the STEREO SECCHI CCD cameras** [6689-04]
N. Waltham, Rutherford Appleton Lab. (United Kingdom); C. Eyles, Rutherford Appleton
Lab. (United Kingdom), Univ. of Birmingham (United Kingdom), and ICMUV, Univ. de
Valencia (Spain)

SESSION 2 OBSERVING THE SOLAR CORONA I

- 6689 0A **HECOR: a HELium CORonagraphy aboard the Herschel sounding rocket** [6689-41]
F. Auchère, Institut d'Astrophysique Spatiale, CNRS-Univ. Paris-Sud (France); M.-F. Ravet-Krill,
Lab. Charles Fabry de l'Institut d'Optique, CNRS-Univ. Paris-Sud (France); J. D. Moses, Naval
Research Lab. (USA); F. Rouesnel, J.-P. Moalic, D. Barbet, Institut d'Astrophysique Spatiale,
CNRS-Univ. Paris-Sud (France); C. Hecquet, A. Jérôme, R. Mercier, Lab. Charles Fabry de
l'Institut d'Optique, CNRS-Univ. Paris-Sud (France); J. Leclec'h, Institut d'Astrophysique
Spatiale, CNRS-Univ. Paris-Sud (France); F. Delmotte, Lab. Charles Fabry de l'Institut
d'Optique, CNRS-Univ. Paris-Sud (France); J. S. Newmark, Naval Research Lab. (USA)
- 6689 0B **Analysis of the comparative responses of SMEI and LASCO** [6689-34]
A. Buffington, Univ. of California, San Diego (USA); J. S. Morrill, Naval Research Lab. (USA);
P. P. Hick, Univ. of California, San Diego (USA); R. A. Howard, Naval Research Lab. (USA);
B. V. Jackson, Univ. of California, San Diego (USA); D. F. Webb, Boston College (USA)

- 6689 0C **A procedure for fitting point sources in SMEI white-light full-sky maps** [6689-35]
P. Hick, A. Buffington, B. V. Jackson, Univ. of California, San Diego (USA)

SESSION 3 OBSERVING THE SOLAR CORONA II

- 6689 0E **The solar ultraviolet magnetograph investigation sounding rocket program** [6689-06]
E. A. West, K. Kobayashi, J. M. Davis, G. A. Gary, NASA/NSSTC (USA)
- 6689 0F **The giant externally occulted coronagraph ASPIICS for the PROBA-3 formation flying mission** [6689-08]
S. Vivès, P. Lamy, M. Venet, P. Levacher, J.L. Boit, Lab. d'Astrophysique de Marseille (France)
- 6689 0G **SMEI observations in the STEREO era** [6689-01]
B. V. Jackson, A. Buffington, P. P. Hick, M. M. Bisi, E. A. Jensen, Univ. of California, San Diego (USA)

SESSION 4 OBSERVING THE SUN FROM GOES

- 6689 0H **GOES-13 SXI initial on-orbit performance results** [6689-10]
S. M. Hill, V. J. Pizzo, A. A. Reinard, D. A. Biesecker, NOAA (USA); J. Lemen, P. Catura, M. Morrison, T. Rink, D. Sabolish, R. Stern, Lockheed Martin Solar Astrophysics Lab. (USA)
- 6689 0I **The Solar X-ray Imager on GOES-13: design, analysis, and on-orbit performance** [6689-11]
J. E. Harvey, A. Krywonos, M. Atanassova, P. L. Thompson, College of Optics & Photonics, Univ. of Central Florida (USA)
- 6689 0J **Report on GOES SXI/XRS calibration effort** [6689-13]
A. Reinard, S. Hill, S. Bailey, V. Pizzo, R. Viereck, NOAA (USA)
- 6689 0K **Solar extreme ultraviolet irradiance observations from GOES: design characteristics and initial performance** [6689-14]
R. Viereck, NOAA/NWS (USA); F. Hanser, J. Wise, Assurance Technology Corp. (USA); S. Guha, SGT-INC (USA); A. Jones, Univ. of Colorado (USA); D. McMullin, S. Plunket, Naval Research Lab. (USA); D. Strickland, S. Evans, Computational Physics Inc. (USA)
- 6689 0L **Analyses of GOES-13 EUV 5-channel spectra** [6689-15]
S. Guha, SGT-INC (USA); A. Jones, LASP, Univ. of Colorado (USA); S. Benner, NASA Goddard Space Flight Ctr. (USA)

SESSION 5 SOLAR EUV OBSERVING SYSTEMS

- 6689 0M **SDO-EVE EUV spectrograph optical design and performance** [6689-18]
D. A. Crotser, T. N. Woods, F. G. Eparvier, M. A. Triplett, D. L. Woodraska, Lab. for Atmospheric and Space Physics (USA)

- 6689 ON **EUV variability experiment (EVE), multiple EUV grating spectrographs (MEGS), radiometric calibrations and results** [6689-19]
P. C. Chamberlin, R. A. Hock, D. A. Crotser, F. G. Eparvier, Lab. for Atmospheric and Space Physics (USA); M. Furst, National Institute of Standards and Technology (USA); M. A. Triplett, D. L. Woodraska, T. N. Woods, Lab. for Atmospheric and Space Physics (USA)
- 6689 OO **SDO EVE CCD and thin foil filter characterization and selection** [6689-20]
M. A. Triplett, D. A. Crotser, T. N. Woods, F. G. Eparvier, P. C. Chamberlin, Lab. for Atmospheric and Space Physics (USA); G. D. Berthiaume, D. M. Weitz, MIT Lincoln Lab. (USA); R. E. Vest, National Institute of Standards and Technology (USA)
- 6689 OP **SDO EVE ESP radiometric calibration and results** [6689-21]
L. Didkovsky, D. Judge, S. Wieman, Univ. of Southern California (USA); T. Woods, P. Chamberlin, A. Jones, F. Eparvier, M. Triplett, D. Woodraska, Univ. of Colorado, Boulder (USA); D. McMullin, Praxis Inc. (USA); M. Furst, R. Vest, National Institute of Standards and Technology (USA)
- 6689 OQ **A light-weight optics-free EUV spectrometer with substantially improved efficiency and spectral resolution** [6689-22]
L. V. Didkovsky, D. L. Judge, S. Wieman, Univ. of Southern California (USA)
- 6689 OR **A filter free dual transmission grating spectrometer for the extreme-ultraviolet** [6689-23]
S. R. Wieman, L. V. Didkovsky, D. L. Judge, Univ. of Southern California (USA); A. R. Jones, M. Harmon, Univ. of Colorado, Boulder (USA)
- 6689 OS **SWAP: a novel EUV telescope for space weather** [6689-24]
J.-M. Defise, J.-P. Halain, Univ. de Liège (Belgium); D. Berghmans, Royal Observatory of Belgium (Belgium); F. Denis, E. Mazy, P. Rochus, T. Thibert, J.-H. Lecat, Univ. de Liège (Belgium); B. Nicula, Royal Observatory of Belgium (Belgium); A. De Groof, Katholieke Univ. Leuven (Belgium); J.-F. Hochedez, Royal Observatory of Belgium (Belgium); U. Schühle, Max-Planck-Institut für Sonnensystemforschung (Germany); M.-F. Ravet, F. Delmotte, Institut d'Optique (France)
- 6689 OU **Silicon photodiodes for absolute soft x-ray radiometry** [6689-26]
J. W. Keister, SFA, Inc. (USA)

SESSION 6 GROUND-BASED SOLAR OBSERVING SYSTEMS

- 6689 OW **High resolution imaging system for Udaipur Solar Observatory** [6689-27]
A. R. Bayanna, R. E. Louis, B. Kumar, S. K. Mathew, P. Venkatakrisnan, Udaipur Solar Observatory (India)
- 6689 OX **Mirrors for solar telescopes made from ZERODUR glass ceramic** [6689-28]
T. Döhring, R. Jedamzik, P. Hartmann, SCHOTT AG (Germany)
- 6689 OY **The thermal environment of the fiber glass dome for the new solar telescope at Big Bear Solar Observatory** [6689-29]
A. P. Verdoni, New Jersey Institute of Technology (USA); C. Denker, New Jersey Institute of Technology (USA) and Astrophysikalisches Institut Potsdam (Germany); J. R. Varsik, S. Shumko, J. Nenow, R. Coulter, Big Bear Solar Observatory (USA)

- 6689 0Z **An image stabilization system for solar observations** [6689-30]
R. Sridharan, A. Raja Bayanna, R. E. Louis, B. Kumar, S. K. Mathew, P. Venkatakrishnan,
Udaipur Solar Observatory (India)

SESSION 7 SOLAR WIND AND SPACE WEATHER

- 6689 10 **Measuring the plane of polarization in a strongly circular signal** [6689-09]
E. A. Jensen, UCSD (USA); C. T. Russell, UCLA (USA)
- 6689 11 **Combined STELab, EISCAT, ESR, and MERLIN IPS observations of the solar wind** [6689-31]
M. M. Bisi, B. V. Jackson, Univ. of California, San Diego (USA); R. A. Fallows, A. R. Breen, Univ.
of Wales, Aberystwyth (United Kingdom); P. P. Hick, Univ. of California, San Diego (USA);
G. Wannberg, EISCAT Scientific Association (Sweden); P. Thomasson, C. A. Jordan,
MERLIN/VLBI National Facility (United Kingdom); G. D. Dorrian, Univ. of Wales, Aberystwyth
(United Kingdom)
- 6689 12 **Performance of a prototype electrostatic analyzer for future solar and heliophysics missions**
[6689-32]
D. O. Kataria, G. Collinson, A. J. Coates, A. N. Fazakerley, C. J. Owen, B. Taylor, L. Bradley,
Mullard Space Science Lab. (United Kingdom)
- 6689 13 **First light for the Bowen fluorescence spatial heterodyne spectrometer at Millstone Hill
Observatory** [6689-33]
S. Watchorn, J. Noto, Scientific Solutions, Inc. (USA); L. S. Waldrop, Univ. of Illinois at Urbana-
Champaign (USA); M. A. Migliozi, Scientific Solutions, Inc. (USA)

Author Index

Conference Committee

Conference Chairs

Silvano Fineschi, Osservatorio Astronomico di Torino (Italy)
Rodney A. Viereck, National Oceanic and Atmospheric
Administration (USA)

Program Committee

Jean-Marc Defise, Centre Spatial de Liège (Belgium)
Leon Golub, Harvard-Smithsonian Center for Astrophysics (USA)
Jean-Philippe A. Halain, Centre Spatial de Liège (Belgium)
Bernard V. Jackson, University of California, San Diego (USA)
J. Daniel Moses, Naval Research Laboratory (USA)
Pierre L. P. M. Rochus, Centre Spatial de Liège (Belgium)

Session Chairs

- 1 The STEREO Mission
Silvano Fineschi, Osservatorio Astronomico di Torino (Italy)
- 2 Observing the Solar Corona I
J. Daniel Moses, Naval Research Laboratory (USA)
- 3 Observing the Solar Corona II
J. Daniel Moses, Naval Research Laboratory (USA)
- 4 Observing the Sun from GOES
Rodney A. Viereck, National Oceanic and Atmospheric
Administration (USA)
Steven M. Hill, National Oceanic and Atmospheric Administration
(USA)
- 5 Solar EUV Observing Systems
Jean-Philippe A. Halain, Centre Spatial de Liège (Belgium)
Edward A. West, NASA Marshall Space Flight Center (USA)
- 6 Ground-based Solar Observing Systems
Edward A. West, NASA Marshall Space Flight Center (USA)
- 7 Solar Wind and Space Weather
Alysha A. Reinard, National Oceanic and Atmospheric
Administration (USA)