

# PROCEEDINGS OF SPIE

[SPIDigitalLibrary.org/conference-proceedings-of-spie](https://spiedigitallibrary.org/conference-proceedings-of-spie)

## Front Matter: Volume 7732

, "Front Matter: Volume 7732," Proc. SPIE 7732, Space Telescopes and Instrumentation 2010: Ultraviolet to Gamma Ray, 773201 (17 September 2010); doi: 10.1117/12.871898

**SPIE.**

Event: SPIE Astronomical Telescopes + Instrumentation, 2010, San Diego, California, United States

# PROCEEDINGS OF SPIE

## ***Space Telescopes and Instrumentation 2010: Ultraviolet to Gamma Ray***

**Monique Arnaud  
Stephen S. Murray  
Tadayuki Takahashi**  
*Editors*

**28 June–2 July 2010  
San Diego, California, United States**

*Sponsored by*  
SPIE

*Cooperating Organizations*

American Astronomical Society (United States) • Association of Universities for Research in Astronomy, Inc. (United States) • Astronomical Society of Japan (Japan) • Atacama Large Millimeter/submillimeter Array • Ball Aerospace & Technologies Corporation (United States) • Canadian Astronomical Society (CASCA) (Canada) • Commissariat à l'Énergie Atomique (France) • European Astronomical Society (Switzerland) • ESO—European Organisation for Astronomical Research in the Southern Hemisphere (Germany) • Japan Aerospace Exploration Agency (Japan) • Jet Propulsion Laboratory (United States) • NASA Goddard Space Flight Center (United States) • National Astronomical Observatory Japan (Japan) National Radio Astronomy Observatory • SOFIA—Stratospheric Observatory for Infrared Astronomy (United States) • Thirty Meter Telescope Project (United States) • W. M. Keck Observatory (United States)

*Published by*  
SPIE

**Volume 7732**

Proceedings of SPIE, 0277-786X, v. 7732

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 *Space Telescopes and Instrumentation 2010: Ultraviolet to Gamma Ray*, edited by Monique Arnaud, Stephen S. Murray, Tadayuki Takahashi, Proceedings of SPIE Vol. 7732 (SPIE, Bellingham, WA, 2010) Article CID Number.

ISSN 0277-786X  
ISBN 9780819482228

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 © 2010, 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](http://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/10/\$18.00.

Printed in the United States of America.

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

The logo for SPIE Digital Library features the word "SPIE" in a bold, sans-serif font above the words "Digital Library" in a smaller, lighter font. To the right of the text is a stylized graphic consisting of three vertical bars of increasing height, resembling a bar chart or a signal waveform.

[SPIDigitalLibrary.org](http://SPIDigitalLibrary.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

## Part One

- xxxi *Conference Committee*
- xxxv *Unknowns and unknown unknowns: from dark sky to dark matter and dark energy (Plenary Paper) [7733-501]*  
*Y. Suto, The Univ. of Tokyo (Japan)*
- xlvii *Optical synoptic telescopes: new science frontiers (Plenary Paper) [7733-502]*  
*J. A. Tyson, Univ. of California, Davis (United States)*

---

### SESSION 1 UV MISSIONS AND TECHNOLOGIES

---

- 7732 02 **Fabrication of FORTIS [7732-01]**  
S. R. McCandliss, B. Fleming, M. E. Kaiser, J. Kruk, P. D. Feldman, The Johns Hopkins Univ. (United States); A. S. Kutyrav, M. J. Li, P. A. Goodwin, D. Rapchun, E. Lyness, A. D. Brown, H. Moseley, NASA Goddard Space Flight Ctr. (United States); O. Siegmund, J. Vallerger, Univ. of California, Berkeley (United States)
- 7732 03 **Large-format high-spatial resolution cross-strip readout MCP detectors for UV astronomy [7732-02]**  
J. Vallerger, Univ. of California, Berkeley (United States); R. Raffanti, Techne Instruments Inc. (United States); A. Tremsin, O. Siegmund, J. McPhate, Univ. of California, Berkeley (United States); G. Varner, Univ. of Hawaii (United States)
- 7732 05 **FIREBALL: the Faint Intergalactic medium Redshifted Emission Balloon: overview and first science flight results [7732-04]**  
B. Milliard, Lab. d'Astrophysique de Marseille (France); D. C. Martin, California Institute of Technology (United States); D. Schiminovich, Columbia Univ. (United States); J. Evrard, Ctr. National d'Études Spatiales (France); M. Matuszewski, S. Rahman, California Institute of Technology (United States); S. Tuttle, Columbia Univ. (United States); R. McLean, California Institute of Technology (United States); J.-M. Deharveng, Lab. d'Astrophysique de Marseille (France); F. Mirc, Ctr. National d'Études Spatiales (France); R. Grange, Lab. d'Astrophysique de Marseille (France); R. Chave, Robert Chave Applied Physics Inc. (United States)
- 7732 06 **Colorado High-resolution Echelle Stellar Spectrograph (CHESS) [7732-05]**  
M. Beasley, E. Burgh, K. France, Ctr. for Astrophysics and Space Astronomy, Univ. of Colorado at Boulder (United States)
- 7732 07 **The Diffuse Interstellar Cloud Experiment (DICE): integration and first-look data [7732-06]**  
E. Schindhelm, E. Burgh, R. Kane, B. Gantner, S. LeVine, M. Beasley, J. Green, Ctr. for Astrophysics and Space Astronomy, Univ. of Colorado at Boulder (United States)

---

**SESSION 2 X-RAY OBSERVATORIES AND OPTICS**

---

- 7732 09 **X-ray telescope design and technology: what the future holds (Invited Paper)** [7732-08]  
R. Willingale, Univ. of Leicester (United Kingdom)
- 7732 0A **Foil x-ray mirrors for astronomical observations: still an evolving technology** [7732-09]  
P. J. Serlemitsos, NASA Goddard Space Flight Ctr. (United States); Y. Soong, NASA Goddard Space Flight Ctr. (United States) and Universities Space Research Association (United States); T. Okajima, NASA Goddard Space Flight Ctr. (United States) and The Johns Hopkins Univ. (United States); D. J. Hahne, NASA Goddard Space Flight Ctr. (United States) and Prime Circuits Inc. (United States)
- 7732 0B **Light weight optics made by glass thermal forming for future x-ray telescopes** [7732-10]  
A. Winter, M. Vongehr, P. Friedrich, Max-Planck-Institute for Extraterrestrial Physics (Germany)
- 7732 0C **Hot slumping glass technology for the grazing incidence optics of future missions with particular reference to IXO** [7732-11]  
M. Ghigo, S. Basso, Osservatorio Astronomico di Brera (Italy); M. Bavdaz, European Space Research and Technology Ctr. (Netherlands); P. Conconi, O. Citterio, Osservatorio Astronomico di Brera (Italy); M. Civitani, Osservatorio Astronomico di Brera (Italy) and Insubria Univ. (Italy); P. Friedrich, Max-Planck-Institut für extraterrestrische Physik (Germany); D. Gallieni, A.D.S. International S.r.l. (Italy); B. Guldemann, European Space Research and Technology Ctr. (Netherlands); F. Martelli, BCV Progetti S.r.l. (Italy); R. Negri, G. Pagano, Osservatorio Astronomico di Brera (Italy) and Politecnico di Milano (Italy); G. Pareschi, Osservatorio Astronomico di Brera (Italy); G. Parodi, BCV Progetti S.r.l. (Italy); L. Proserpio, Osservatorio Astronomico di Brera (Italy) and Insubria Univ. (Italy); B. Salmaso, Osservatorio Astronomico di Brera (Italy); F. Scaglione, Osservatorio Astronomico di Brera (Italy) and Politecnico di Milano (Italy); D. Spiga, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); L. Terzi, Osservatorio Astronomico di Brera (Italy) and Politecnico di Milano (Italy); M. Tintori, A.D.S. International S.r.l. (France); M. Vongehr, Max-Planck-Institut für extraterrestrische Physik (Germany); E. Wille, European Space Research and Technology Ctr. (Netherlands); A. Winter, Max-Planck-Institut für extraterrestrische Physik (Germany); A. Zambra, Osservatorio Astronomico di Brera (Italy)
- 7732 0D **Design and development of thin quartz glass WFXT polynomial mirror shells by direct polishing** [7732-12]  
L. Proserpio, Osservatorio Astronomico di Brera (Italy) and Insubria Univ. (Italy); S. Campana, O. Citterio, Osservatorio Astronomico di Brera, INAF (Italy); M. Civitani, Osservatorio Astronomico di Brera (Italy) and Insubria Univ. (Italy); H. Combrinck, Zeeko Ltd. (United Kingdom); P. Conconi, V. Cotroneo, Osservatorio Astronomico di Brera (Italy); R. Freeman, Zeeko Ltd. (United Kingdom); P. Langstrof, Heraeus Quarzglas GmbH & Co. KG (Germany); E. Mattaini, INAF - IASF Milano (Italy); R. Morton, Zeeko Ltd. (United Kingdom); B. Oberle, Heraeus Quarzglas GmbH & Co. KG (Germany); G. Pareschi, Osservatorio Astronomico di Brera (Italy); G. Parodi, BCV Progetti S.r.l. (Italy); C. Pels, C. Schenk, R. Stock, Heraeus Quarzglas GmbH & Co. KG (Germany); G. Tagliaferri, Osservatorio Astronomico di Brera (Italy)

---

**SESSION 3 X-RAY POLARIMETRY**

---

- 7732 0E **On understanding the figures of merit for detection and measurement of x-ray polarization** [7732-13]  
M. C. Weisskopf, R. F. Elsner, S. L. O'Dell, NASA Marshall Space Flight Ctr. (United States)
- 7732 0F **Broadband soft x-ray polarimetry** [7732-14]  
H. L. Marshall, R. K. Heilmann, N. S. Schulz, K. D. Murphy, Massachusetts Institute of Technology (United States)
- 7732 0G **Hard x-ray polarimetry with HX-POL** [7732-15]  
A. B. Garson III, K. Lee, J. Martin, M. Beilicke, Washington Univ. in St. Louis and the McDonnell Ctr. for Space Sciences (United States); E. Wulf, E. Novikova, U.S. Naval Research Lab. (United States); H. S. Krawczynski, Washington Univ. in St. Louis and the McDonnell Ctr. for Space Sciences (United States)

---

**SESSION 4 GAMMA-RAY OBSERVATORIES**

---

- 7732 0H **The building of Fermi-LAT (Invited Paper)** [7732-16]  
W. N. Johnson, U.S. Naval Research Lab. (United States)
- 7732 0I **The tracker of the Fermi Large Area Telescope** [7732-17]  
J. Bregeon, L. Baldini, Istituto Nazionale di Fisica Nucleare (Italy)
- 7732 0J **The calorimeter of the Fermi Large Area Telescope** [7732-18]  
J. E. Grove, W. N. Johnson, U.S. Naval Research Lab. (United States)

---

**SESSION 5 ASTROPHYSICAL SCIENCE DRIVERS FOR NEW OBSERVATORIES**

---

- 7732 0L **The origin of the elements as seen through supernova remnants (Invited Paper)** [7732-20]  
A. Decourchelle, Lab. AIM, CEA/IRFU, CNRS/INSU, Univ. Paris VII (France)

---

**SESSION 6 SOLAR MISSIONS AND TECHNOLOGIES**

---

- 7732 0P **First light of SWAP on-board PROBA2** [7732-24]  
J.-P. Halain, Ctr. Spatial de Liège, Univ. de Liège (Belgium); D. Berghmans, Royal Observatory of Belgium (Belgium); J.-M. Defise, E. Renotte, T. Thibert, E. Mazy, P. Rochus, Ctr. Spatial de Liège, Univ. de Liège (Belgium); B. Nicula, Royal Observatory of Belgium (Belgium); A. De Groof, Royal Observatory of Belgium (Belgium) and European Space Research and Technology Ctr. (Netherlands); D. Seaton, U. Schühle, Max-Planck-Institut für Sonnensystemforschung (Germany)
- 7732 0Q **Development of double-sided silicon strip detectors for solar hard x-ray observation** [7732-25]  
S. Saito, S. Ishikawa, S. Watanabe, H. Odaka, S. Sugimoto, T. Fukuyama, Japan Aerospace Exploration Agency (Japan) and The Univ. of Tokyo (Japan); M. Kokubun, The Univ. of Tokyo (Japan); T. Takahashi, Japan Aerospace Exploration Agency (Japan) and The Univ. of Tokyo (Japan); Y. Terada, Saitama Univ. (Japan); H. Tajima, T. Tanaka, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); S. Krucker, Univ. of California,

Berkeley (United States); S. Christe, NASA Goddard Space Flight Ctr. (United States); S. McBride, L. Glesener, Univ. of California, Berkeley (United States)

- 7732 OR **The technical challenges of the Solar-Orbiter EUI instrument** [7732-26]  
J.-P. Halain, P. Rochus, Ctr. Spatial de Liège, Univ. de Liège (Belgium); T. Appourchaux, Institut d'Astrophysique Spatiale (France); D. Berghmans, Royal Observatory of Belgium (Belgium); L. Harra, Mullard Space Science Lab. (United Kingdom); U. Schühle, Max-Planck-Institut für Sonnensystemforschung (Germany); F. Auchère, Institut d'Astrophysique Spatiale (France); A. Zhukov, Royal Observatory of Belgium (Belgium); E. Renotte, J.-M. Defise, L. Rossi, K. Fleury-Frenette, L. Jacques, Ctr. Spatial de Liège, Univ. de Liège (Belgium); J.-F. Hochedez, A. Ben Moussa, Royal Observatory of Belgium (Belgium)

---

**SESSION 7 MEDIUM X-RAY OBSERVATORIES I**

---

- 7732 OS **The Nuclear Spectroscopic Telescope Array (NuSTAR)** [7732-27]  
F. A. Harrison, California Institute of Technology (United States); S. Boggs, Univ. of California, Berkeley (United States); F. Christensen, DTU Space (Denmark); W. Craig, Univ. of California, Berkeley (United States) and Lawrence Livermore National Lab. (United States); C. Hailey, Columbia Univ. (United States); D. Stern, Jet Propulsion Lab. (United States); W. Zhang, L. Angelini, NASA Goddard Space Flight Ctr. (United States); H. An, Columbia Univ. (United States); V. Bhalereo, California Institute of Technology (United States); N. Brejnholt, DTU Space (Denmark); L. Cominsky, Sonoma State Univ. (United States); W. R. Cook, California Institute of Technology (United States); M. Doll, Columbia Univ. (United States); P. Giommi, Agenzia Spaziale Italiana (Italy); B. Grefenstette, California Institute of Technology (United States); A. Hornstrup, DTU Space (Denmark); V. Kaspi, McGill Univ. (Canada); Y. Kim, Jet Propulsion Lab. (United States); T. Kitaguchi, California Institute of Technology (United States); J. Koglin, Columbia Univ. (United States); C. C. Liebe, Jet Propulsion Lab. (United States); G. Madejski, SLAC, Stanford Univ. (United States); K. Kruse Madsen, P. Mao, California Institute of Technology (United States); D. Meier, Jet Propulsion Lab. (United States); H. Miyasaka, California Institute of Technology (United States); K. Mori, Columbia Univ. (United States); M. Perri, Agenzia Spaziale Italiana (Italy); M. Pivovarov, Lawrence Livermore National Lab. (United States); S. Puccetti, Agenzia Spaziale Italiana (Italy); V. Rana, California Institute of Technology (United States); A. Zoglauer, Univ. of California, Berkeley (United States)
- 7732 OT **The Nuclear Spectroscopic Telescope Array (NuSTAR): optics overview and current status** [7732-28]  
C. J. Hailey, H. An, K. L. Blaedel, Columbia Univ. (United States); N. F. Brejnholt, F. E. Christensen, Danish Technical Univ. (Denmark); W. W. Craig, Lawrence Livermore National Lab. (United States); T. A. Decker, M. Doll, Columbia Univ. (United States); J. Gum, NASA Goddard Space Flight Ctr. (United States); J. E. Koglin, Columbia Univ. (United States); C. P. Jensen, Danish Technical Univ. (Denmark); L. Hale, K. Mori, Columbia Univ. (United States); M. J. Pivovarov, Lawrence Livermore National Lab. (United States); M. Sharpe, NASA Goddard Space Flight Ctr. (United States); M. Stern, G. Tajiri, Columbia Univ. (United States); W. W. Zhang, NASA Goddard Space Flight Ctr. (United States)
- 7732 OU **eROSITA on SRG** [7732-29]  
P. Predehl, R. Andritschke, H. Böhringer, W. Bornemann, H. Bräuninger, H. Brunner, M. Brusa, W. Burkert, V. Burwitz, N. Cappelluti, Max-Planck-Institut für extraterrestrische Physik (Germany); E. Churazov, Max-Planck-Institut für Astrophysik (Germany); K. Dennerl, J. Eder, J. Elbs, M. Freyberg, P. Friedrich, M. Fürmetz, R. Gaida, O. Hölker, G. Hartner,

Max-Planck-Institut für extraterrestrische Physik (Germany); G. Hasinger, Max-Planck-Institut für Plasma Physik (Germany); S. Hermann, H. Huber, Max-Planck-Institut für extraterrestrische Physik (Germany); E. Kendziorra, Institut für Astronomie und Astrophysik, Eberhard Karls Univ. Tübingen (Germany); A. von Kienlin, W. Kink, Max-Planck-Institut für extraterrestrische Physik (Germany); I. Kreykenbohm, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); G. Lamer, Astrophysikalisches Institut Potsdam (Germany); I. Lapchov, Space Research Institute (Russian Federation); K. Lehmann, Institut für Astronomie und Astrophysik, Eberhard Karls Univ. Tübingen (Germany); N. Meidinger, B. Mican, Max-Planck-Institut für extraterrestrische Physik (Germany); J. Mohr, Max-Planck-Institut für extraterrestrische Physik (Germany) and Ludwig-Maximilians-Univ. München (Germany); M. Mühlegger, S. Müller, K. Nandra, Max-Planck-Institut für extraterrestrische Physik (Germany); M. Pavlinsky, Space Research Institute (Russian Federation); E. Pfeffermann, Max-Planck-Institut für extraterrestrische Physik (Germany); T. Reiprich, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany); J. Robrade, Univ. Hamburg (Germany); C. Rohé, Max-Planck-Institut für extraterrestrische Physik (Germany); A. Santangelo, Institut für Astronomie und Astrophysik, Eberhard Karls Univ. Tübingen (Germany); G. Schächner, Max-Planck-Institut für extraterrestrische Physik (Germany); T. Schanz, Institut für Astronomie und Astrophysik, Eberhard Karls Univ. Tübingen (Germany); C. Schmid, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); J. Schmitt, Univ. Hamburg (Germany); R. Schreib, F. Schrey, Max-Planck-Institut für extraterrestrische Physik (Germany); A. Schwobe, M. Steinmetz, Astrophysikalisches Institut Potsdam (Germany); L. Strüder, Max-Planck-Institut für extraterrestrische Physik (Germany); R. Sunyaev, Max-Planck-Institut für Astrophysik (Germany); C. Tenzer, Institut für Astronomie und Astrophysik, Eberhard Karls Univ. Tübingen (Germany); L. Tiedemann, M. Vongehr, Max-Planck-Institut für extraterrestrische Physik (Germany); J. Wilms, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

7732 0W **The Gravity and Extreme Magnetism Small Explorer [7732-31]**  
K. Jahoda, NASA Goddard Space Flight Ctr. (United States)

7732 0X **The GEMS photoelectric x-ray polarimeters [7732-32]**  
J. K. Black, Rock Creek Scientific (United States) and NASA Goddard Space Flight Ctr. (United States); P. Deines-Jones, NASA Goddard Space Flight Ctr. (United States); J. E. Hill, CRESST/Universities Space Research Association (United States) and NASA Goddard Space Flight Ctr. (United States); T. Iwahashi, RIKEN (Japan) and Tokyo Univ. of Science (Japan); K. Jahoda, NASA Goddard Space Flight Ctr. (United States); P. Kaaret, The Univ. of Iowa (United States); T. R. Kallman, NASA Goddard Space Flight Ctr. (United States); C. J. Martoff, Temple Univ. (United States); Z. Prieskorn, The Univ. of Iowa (United States); J. Swank, NASA Goddard Space Flight Ctr. (United States); T. Tamagawa, RIKEN (Japan) and Tokyo Univ. of Science (Japan)

---

## SESSION 8 MEDIUM X-RAY OBSERVATORIES II

7732 0Y **Early results of MAXI (Monitor of All-sky X-ray Image) on ISS (Invited Paper) [7732-33]**  
M. Matsuoka, RIKEN (Japan) and Japan Aerospace Exploration Agency (Japan); T. Mihara, M. Sugizaki, M. Suzuki, Y. E. Nakagawa, T. Yamamoto, T. Sootome, RIKEN (Japan); K. Kawasaki, S. Ueno, H. Tomida, M. Kohama, M. Ishikawa, Y. Adachi, Y. Itamoto, Y. Kobayashi, H. Katayama, Japan Aerospace Exploration Agency (Japan); N. Kawai, M. Morii, K. Sugimori, Tokyo Institute of Technology (Japan); H. Tsunemi, M. Kimura, Osaka Univ. (Japan); A. Yoshida, K. Yamaoka, S. Nakahira, Aoyama Gakuin Univ. (Japan); H. Negoro, H. Ozawa, F. Suwa, M. Nakajima, Nihon Univ. (Japan); Y. Ueda, N. Isobe, S. Eguchi, K. Hiroi, Kyoto Univ. (Japan); K. Ebisawa, Japan Aerospace Exploration Agency



(Japan); A. Daikyuji, M. Yamauchi, Univ. of Miyazaki (Japan); A. Uzawa, T. Matsumura, K. Yamazaki, Y. Tsuboi, Chuo Univ. (Japan)

7732 OZ **The ASTRO-H Mission [7732-34]**

T. Takahashi, K. Mitsuda, Japan Aerospace Exploration Agency (Japan); R. Kelley, NASA Goddard Space Flight Ctr. (United States); F. Aharonian, Dublin Institute for Advanced Studies (Ireland); F. Akimoto, Nagoya Univ. (Japan); S. Allen, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); N. Anabuki, Osaka Univ. (Japan); L. Angelini, NASA Goddard Space Flight Ctr. (United States); K. Arnaud, Univ. of Maryland (United States); H. Awaki, Ehime Univ. (Japan); A. Bamba, Dublin Institute for Advanced Studies (Ireland); N. Bando, Japan Aerospace Exploration Agency (Japan); M. Bautz, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); R. Blandford, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); K. Boyce, NASA Goddard Space Flight Ctr. (United States); G. Brown, Lawrence Livermore National Lab. (United States); M. Chernyakova, Dublin Institute for Advanced Studies (Ireland); P. Coppi, Yale Univ. (United States); E. Costantini, SRON Netherlands Institute for Space Research (Netherlands); J. Cottam, J. Crow, NASA Goddard Space Flight Ctr. (United States); J. de Plaa, C de Vries, J.-W. den Herder, SRON Netherlands Institute for Space Research (Netherlands); M. DiPirro, NASA Goddard Space Flight Ctr. (United States); C. Done, Durham Univ. (United Kingdom); T. Dotani, K. Ebisawa, Japan Aerospace Exploration Agency (Japan); T. Enoto, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Ezoe, Tokyo Metropolitan Univ. (Japan); A. Fabian, Univ. of Cambridge (United Kingdom); R. Fujimoto, Kanazawa Univ. (Japan); Y. Fukazawa, Hiroshima Univ. (Japan); S. Funk, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); A. Furuzawa, Nagoya Univ. (Japan); M. Galeazzi, Univ. of Miami (United States); P. Gandhi, Japan Aerospace Exploration Agency (Japan); K. Gendreau, NASA Goddard Space Flight Ctr. (United States); K. Gilmore, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Haba, Nagoya Univ. (Japan); K. Hamaguchi, Univ. of Maryland (United States); I. Hatsukade, Univ. of Miyazaki (Japan); K. Hayashida, Osaka Univ. (Japan); J. Hiraga, The Univ. of Tokyo (Japan); K. Hirose, Japan Aerospace Exploration Agency (Japan); A. Hornschemeier, NASA Goddard Space Flight Ctr. (United States); J. Hughes, Rutgers, The State Univ. of New Jersey (United States); U. Hwang, The Johns Hopkins Univ. (United States); R. Iizuka, Chuo Univ. (Japan); K. Ishibashi, Nagoya Univ. (Japan); M. Ishida, K. Ishimura, Japan Aerospace Exploration Agency (Japan); Y. Ishisaki, Tokyo Metropolitan Univ. (Japan); N. Isobe, Kyoto Univ. (Japan); M. Ito, Kobe Univ. (Japan); N. Iwata, Japan Aerospace Exploration Agency (Japan); J. Kaastra, SRON Netherlands Institute for Space Research (Netherlands); T. Kallman, NASA Goddard Space Flight Ctr. (United States); T. Kamae, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); H. Katagiri, Hiroshima Univ. (Japan); J. Kataoka, Waseda Univ. (Japan); S. Katsuda, NASA Goddard Space Flight Ctr. (United States); M. Kawaharada, Japan Aerospace Exploration Agency (Japan); N. Kawai, Tokyo Institute of Technology (Japan); S. Kawasaki, D. Khangaluyan, Japan Aerospace Exploration Agency (Japan); C. Kilbourne, NASA Goddard Space Flight Ctr. (United States); K. Kinugasa, Gunma Astronomical Observatory (Japan); S. Kitamoto, Rikkyo Univ. (Japan); T. Kitayama, Toho Univ. (Japan); T. Kohmura, Kogakuin Univ. (Japan); M. Kokubun, Japan Aerospace Exploration Agency (Japan); T. Kosaka, Kochi Univ. of Technology (Japan); T. Kotani, Aoyama Gakuin Univ. (Japan); K. Koyama, Kyoto Univ. (Japan); A. Kubota, Shibaura Institute of Technology (Japan); H. Kunieda, Nagoya Univ. (Japan); P. Laurent, F. Lebrun, O. Limousin, IRFU/Service d'Astrophysique, CEA Saclay (France); M. Loewenstein, NASA Goddard Space Flight Ctr. (United States); K. Long, Space Telescope Science Institute (United States); G. Madejski, Kavli

Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Maeda, Japan Aerospace Exploration Agency (Japan); K. Makishima, The Univ. of Tokyo (Japan); M. Markevitch, Harvard-Smithsonian Ctr. for Astrophysics (United States); H. Matsumoto, Nagoya Univ. (Japan); K. Matsushita, Tokyo Univ. of Science (Japan); D. McCammon, Univ. of Wisconsin-Madison (United States); J. Miller, Univ. of Michigan (United States); S. Mineshige, Kyoto Univ. (Japan); K. Minesugi, Japan Aerospace Exploration Agency (Japan); T. Miyazawa, Nagoya Univ. (Japan); T. Mizuno, Hiroshima Univ. (Japan); K. Mori, Univ. of Miyazaki (Japan); H. Mori, Japan Aerospace Exploration Agency (Japan); K. Mukai, NASA Goddard Space Flight Ctr. (United States); H. Murakami, Rikkyo Univ. (Japan); T. Murakami, Kanazawa Univ. (Japan); R. Mushotzky, Univ. of Maryland (United States); Y. Nakagawa, RIKEN (Japan); T. Nakagawa, Japan Aerospace Exploration Agency (Japan); H. Nakajima, Osaka Univ. (Japan); T. Nakamori, Waseda Univ. (Japan); K. Nakazawa, The Univ. of Tokyo (Japan); Y. Namba, Chubu Univ. (Japan); M. Nomachi, Osaka Univ. (Japan); S. O'Dell, NASA Marshall Space Flight Ctr. (United States); H. Ogawa, M. Ogawa, Japan Aerospace Exploration Agency (Japan); K. Ogi, Ehime Univ. (Japan); T. Ohashi, Tokyo Metropolitan Univ. (Japan); M. Ohno, M. Ohta, Japan Aerospace Exploration Agency (Japan); T. Okajima, The Johns Hopkins Univ. (United States); N. Ota, Tokyo Univ. of Science (Japan); M. Ozaki, Japan Aerospace Exploration Agency (Japan); F. Paerels, Columbia Univ. (United States); S. Paltani, Univ. of Geneva (Switzerland); A. Parmar, European Space Research and Technology Ctr. (Netherlands); R. Petre, NASA Goddard Space Flight Ctr. (United States); M. Pohl, Univ. of Geneva (Switzerland); S. Porter, NASA Goddard Space Flight Ctr. (United States); B. Ramsey, NASA Marshall Space Flight Ctr. (United States); C. Reynolds, Univ. of Maryland, College Park (United States); S. Sakai, Japan Aerospace Exploration Agency (Japan); R. Sambruna, NASA Goddard Space Flight Ctr. (United States); G. Sato, Y. Sato, Japan Aerospace Exploration Agency (Japan); P. Serlemitsos, NASA Goddard Space Flight Ctr. (United States); M. Shida, T. Shimada, K. Shinozaki, Japan Aerospace Exploration Agency (Japan); P. Shirron, NASA Goddard Space Flight Ctr. (United States); R. Smith, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Sneiderman, Y. Soong, NASA Goddard Space Flight Ctr. (United States); L. Stawarz, H. Sugita, Japan Aerospace Exploration Agency (Japan); A. Szymkowiak, Yale Univ. (United States); H. Tajima, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); H. Takahashi, Hiroshima Univ. (Japan); Y. Takei, Japan Aerospace Exploration Agency (Japan); T. Tamagawa, RIKEN (Japan); T. Tamura, K. Tamura, Japan Aerospace Exploration Agency (Japan); T. Tanaka, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Tanaka, Y. Tanaka, Japan Aerospace Exploration Agency (Japan); M. Tashiro, Saitama Univ. (Japan); Y. Tawara, Nagoya Univ. (Japan); Y. Terada, Saitama Univ. (Japan); Y. Terashima, Ehime Univ. (Japan); F. Tombesi, NASA Goddard Space Flight Ctr. (United States); H. Tomida, Japan Aerospace Exploration Agency (Japan); M. Tozuka, Tokyo Univ. of Science (Japan); Y. Tsuboi, Chuo Univ. (Japan); M. Tsujimoto, Japan Aerospace Exploration Agency (Japan); H. Tsunemi, Osaka Univ. (Japan); T. Tsuru, Kyoto Univ. (Japan); H. Uchida, Osaka Univ. (Japan); Y. Uchiyama, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); H. Uchiyama, The Univ. of Tokyo (Japan); Y. Ueda, Kyoto Univ. (Japan); S. Uno, Nihon Fukushi Univ. (Japan); M. Urry, Yale Univ. (United States); S. Watanabe, Japan Aerospace Exploration Agency (Japan); N. White, NASA Goddard Space Flight Ctr. (United States); T. Yamada, Japan Aerospace Exploration Agency (Japan); H. Yamaguchi, RIKEN (Japan); K. Yamaoka, Aoyama Gakuin Univ. (Japan); N. Yamasaki, Japan Aerospace Exploration Agency (Japan); M. Yamauchi, Univ. of Miyazaki (Japan); S. Yamauchi, Nara Women's Univ. (Japan); Y. Yatsu, Tokyo Institute of Technology (Japan); D. Yonetoku, Kanazawa Univ. (Japan); A. Yoshida, Aoyama Gakuin Univ. (Japan)

- 7732 10 **Soft x-ray imager (SXI) onboard ASTRO-H [7732-35]**  
H. Tsunemi, K. Hayashida, Osaka Univ. (Japan); T. G. Tsuru, Kyoto Univ. (Japan); T. Dotani, Japan Aerospace Exploration Agency (Japan); J. S. Hiraga, The Univ. of Tokyo (Japan); N. Anabuki, Osaka Univ. (Japan); A. Bamba, Japan Aerospace Exploration Agency (Japan); I. Hatsukade, Univ. of Miyazaki (Japan); T. Kohmura, Kogakuin Univ. (Japan); K. Mori, Univ. of Miyazaki (Japan); H. Murakami, Rikkyo Univ. (Japan); H. Nakajima, Osaka Univ. (Japan); M. Ozaki, Japan Aerospace Exploration Agency (Japan); H. Uchida, Osaka Univ. (Japan); M. Yamauchi, Univ. of Miyazaki (Japan)

---

**SESSION 9 MEDIUM X-RAY OBSERVATORIES III**

- 7732 11 **The high-resolution x-ray microcalorimeter spectrometer system for the SXS on ASTRO-H [7732-36]**  
K. Mitsuda, Japan Aerospace Exploration Agency (Japan); R. L. Kelley, K. R. Boyce, NASA Goddard Space Flight Ctr. (United States); G. V. Brown, Lawrence Livermore National Lab. (United States); E. Costantini, SRON Netherlands Institute for Space Research (Netherlands); M. J. DiPirro, NASA Goddard Space Flight Ctr. (United States); Y. Ezoe, Tokyo Metropolitan Univ. (Japan); R. Fujimoto, Kanazawa Univ. (Japan); K. C. Gendreau, NASA Goddard Space Flight Ctr. (United States); J.-W. den Herder, SRON Netherlands Institute for Space Research (Netherlands); A. Hoshino, Kanazawa Univ. (Japan); Y. Ishisaki, Tokyo Metropolitan Univ. (Japan); C. A. Kilbourne, NASA Goddard Space Flight Ctr. (United States); S. Kitamoto, Rikkyo Univ. (Japan); D. McCammon, Univ. of Wisconsin-Madison (United States); M. Murakami, Univ. of Tsukuba (Japan); H. Murakami, Rikkyo Univ. (Japan); M. Ogawa, Japan Aerospace Exploration Agency (Japan); T. Ohashi, Tokyo Metropolitan Univ. (Japan); A. Okamoto, Japan Aerospace Exploration Agency (Japan); S. Paltani, M. Pohl, Univ. of Geneva (Switzerland); F. S. Porter, NASA Goddard Space Flight Ctr. (United States); Y. Sato, K. Shinozaki, Japan Aerospace Exploration Agency (Japan); P. J. Shirron, G. A. Sneiderman, NASA Goddard Space Flight Ctr. (United States); H. Sugita, Japan Aerospace Exploration Agency (Japan); A. Szymkowiak, Yale Univ. (United States); Y. Takei, Japan Aerospace Exploration Agency (Japan); T. Tamagawa, RIKEN (Japan); M. Tashiro, Y. Terada, Saitama Univ. (Japan); M. Tsujimoto, Japan Aerospace Exploration Agency (Japan); C. de Vries, SRON Netherlands Institute for Space Research (Netherlands); H. Yamaguchi, RIKEN (Japan); N. Y. Yamasaki, Japan Aerospace Exploration Agency (Japan)
- 7732 12 **Design of a 3-stage ADR for the soft x-ray spectrometer instrument on the ASTRO-H mission [7732-37]**  
P. J. Shirron, M. O. Kimball, D. C. Wegel, E. R. Canavan, M. J. DiPirro, NASA Goddard Space Flight Ctr. (United States)
- 7732 13 **Filters and calibration sources for the soft x-ray spectrometer (SXS) instrument on ASTRO-H [7732-38]**  
C. P. de Vries, J. W. den Herder, E. Costantini, H. Aarts, P. Lowes, J. S. Kaastra, SRON Netherlands Institute for Space Research (Netherlands); R. Kelley, K. Gendreau, Z. Arzoumanian, R. Koenecke, NASA Goddard Space Flight Ctr. (United States); D. Haas, S. Paltani, ISDC Data Ctr. for Astrophysics (Switzerland); K. Mitsuda, N. Y. Yamasaki, Japan Aerospace Exploration Agency (Japan)
- 7732 14 **Hard x-ray telescope to be onboard ASTRO-H [7732-39]**  
H. Kunieda, Nagoya Univ. (Japan); H. Awaki, Ehime Univ. (Japan); A. Furuzawa, Y. Haba, Nagoya Univ. (Japan); R. Iizuka, Chuo Univ. (Japan); K. Ishibashi, Nagoya Univ. (Japan); M. Ishida, Japan Aerospace Exploration Agency (Japan); M. Itoh, Kobe Univ. (Japan);

T. Kosaka, Kochi Univ. of Technology (Japan); Y. Maeda, Japan Aerospace Exploration Agency (Japan); H. Matsumoto, T. Miyazawa, H. Mori, Nagoya Univ. (Japan); Y. Namba, Chubu Univ. (Japan); Y. Ogasaka, Nagoya Univ. (Japan); K. Ogi, Ehime Univ. (Japan); T. Okajima, NASA Goddard Space Flight Ctr. (United States) and The Johns Hopkins Univ. (United States); Y. Suzuki, JASRI/SPring-8 (Japan); K. Tamura, Japan Aerospace Exploration Agency (Japan); Y. Tawara, Nagoya Univ. (Japan); K. Uesugi, JASRI/SPring-8 (Japan); K. Yamashita, Nagoya Univ. (Japan); S. Yamauchi, Nara Women's Univ. (Japan)

7732 15 **Hard x-ray imager (HXI) for the ASTRO-H Mission [7732-40]**

M. Kokubun, Japan Aerospace Exploration Agency (Japan); K. Nakazawa, The Univ. of Tokyo (Japan); T. Enoto, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Fukazawa, Hiroshima Univ. (Japan); K. Gilmore, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); J. Kataoka, Waseda Univ. (Japan); M. Kawaharada, Japan Aerospace Exploration Agency (Japan); P. Laurent, F. Lebrun, O. Limousin, IRFU, Service d'Astrophysique, CEA Saclay (France); K. Makishima, The Univ. of Tokyo (Japan); T. Mizuno, Hiroshima Univ. (Japan); K. Mori, Japan Aerospace Exploration Agency (Japan); T. Nakamori, Waseda Univ. (Japan); M. Ohno, M. Ohta, G. Sato, Japan Aerospace Exploration Agency (Japan); H. Tajima, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); H. Takahashi, Hiroshima Univ. (Japan); T. Takahashi, Japan Aerospace Exploration Agency (Japan); T. Tanaka, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Terada, Saitama Univ. (Japan); H. Uchiyama, The Univ. of Tokyo (Japan); Y. Uchiyama, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); S. Watanabe, Japan Aerospace Exploration Agency (Japan); Y. Yatsu, Tokyo Institute of Technology (Japan); K. Yamaoka, Aoyama Gakuin Univ. (Japan)

7732 16 **Soft gamma-ray detector for the ASTRO-H Mission [7732-41]**

H. Tajima, R. Blandford, T. Enoto, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Fukazawa, Hiroshima Univ. (Japan); K. Gilmore, T. Kamae, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); J. Kataoka, Waseda Univ. (Japan); M. Kawaharada, M. Kokubun, Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (Japan); P. Laurent, F. Lebrun, O. Limousin, IRFU, Service d'Astrophysique, CEA (France); G. Madejski, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); K. Makishima, The Univ. of Tokyo (Japan); T. Mizuno, Hiroshima Univ. (Japan); K. Nakazawa, The Univ. of Tokyo (Japan); M. Ohno, M. Ohta, G. Sato, R. Sato, Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (Japan); H. Takahashi, Hiroshima Univ. (Japan); T. Takahashi, Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (Japan) and The Univ. of Tokyo (Japan); T. Tanaka, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); M. Tashiro, Y. Terada, Saitama Univ. (Japan); Y. Uchiyama, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); S. Watanabe, Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency (Japan) and The Univ. of Tokyo (Japan); K. Yamaoka, Aoyama Gakuin Univ. (Japan); D. Yonetoku, Kanazawa Univ. (Japan)

---

**SESSION 10 MEDIUM X-RAY OBSERVATORIES IV**

7732 17 **NHXM: a New Hard X-ray Imaging and Polarimetric Mission [7732-42]**

G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); A. Argan, Istituto Nazionale di Astrofisica (Italy); R. Bellazzini, Istituto Nazionale di Fisica Nucleare (Italy); J. Bookbinder,

Harvard-Smithsonian Ctr. for Astrophysics (United States); O. Catalano, INAF - IASF Palermo (Italy); E. Cavazzuti, Agenzia Spaziale Italiana (Italy); E. Costa, INAF - IASF Roma (Italy); G. Cusumano, INAF - IASF Palermo (Italy); F. Fiore, Osservatorio Astronomico di Roma (Italy); C. Fiorini, Politecnico di Milano (Italy); P. Giommi, Agenzia Spaziale Italiana (Italy); G. Malaguti, INAF - IASF Bologna (Italy); G. Matt, Univ. degli Studi di Roma Tre (Italy); S. Mereghetti, INAF - IASF Milano (Italy); G. Micela, Osservatorio Astronomico di Palermo (Italy); S. Murray, Harvard-Smithsonian Ctr. for Astrophysics (United States); B. Negri, Agenzia Spaziale Italiana (Italy); G. Pareschi, Osservatorio Astronomico di Brera (Italy); G. Perola, Univ. degli Studi di Roma Tre (Italy); S. Romaine, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Villa, INAF - IASF Milano (Italy)

7732 18 **The optics system of the New Hard X-ray Mission: design and development** [7732-43]  
S. Basso, G. Pareschi, O. Citterio, D. Spiga, G. Tagliaferri, M. Civitani, L. Raimondi, G. Sironi, V. Cotroneo, Osservatorio Astronomico di Brera (Italy); B. Negri, Agenzia Spaziale Italiana (Italy); G. Parodi, F. Martelli, BCV Progetti S.r.l. (Italy); G. Borghi, A. Orlandi, D. Vernani, G. Valsecchi, R. Binda, Media Lario Technologies (Italy); S. Romaine, P. Gorenstein, P. Attinà, Harvard-Smithsonian Ctr. for Astrophysics (United States)

7732 19 **The NHXM spectral-imaging cameras** [7732-44]  
O. Catalano, INAF - IASF Palermo (Italy); A. Argan, Istituto Nazionale di Astrofisica (Italy); R. Bellazzini, A. Brez, Istituto Nazionale di Fisica Nucleare (Italy); E. Costa, INAF - IASF Roma (Italy); C. Fiorini, Politecnico di Milano (Italy); G. Malaguti, INAF - IASF Bologna (Italy); G. Pareschi, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); M. Uslenghi, INAF - IASF Milano (Italy)

7732 1A **A set of x-ray polarimeters for the New Hard X-ray Imaging and Polarimetric Mission** [7732-45]  
P. Soffitta, E. Costa, F. Muleri, R. Campana, E. Del Monte, S. Di Cosimo, Y. Evangelista, S. Fabiani, M. Feroci, F. Lazzarotto, A. Rubini, INAF - IASF Roma (Italy); R. Bellazzini, A. Brez, M. Minuti, N. Omodei, M. Pinchera, M. Razzano, C. Sgrò, G. Spandre, Istituto Nazionale di Fisica Nucleare (Italy); A. Argan, Istituto Nazionale di Astrofisica (Italy); G. Matt, Univ. degli Studi di Roma Tre (Italy)

---

## SESSION 11 LARGE X-RAY OBSERVATORIES I

---

7732 1B **An overview of the IXO Observatory (Invited Paper)** [7732-46]  
J. Bookbinder, Harvard-Smithsonian Ctr. for Astrophysics (United States)

7732 1C **ESA assessment study activities on the International X-ray Observatory** [7732-47]  
N. Rando, D. Martin, D. Lumb, P. Verhoeve, T. Oosterbroek, L. Puig, G. Saavedra, M. Linder, L. Scolamiero, T. Voirin, C. Damasio, D. de Wilde, European Space Research and Technology Ctr. (Netherlands); M. Landgraf, European Space Operations Ctr. (Germany); P. Gondoin, European Space Research and Technology Ctr. (Netherlands); M. Bavdaz, European Space Operations Ctr. (Germany)

7732 1D **Payload study activities on the International X-ray Observatory** [7732-48]  
D. Martin, N. Rando, D. Lumb, P. Verhoeve, T. Oosterbroek, L. Puig, G. Saavedra, M. Bavdaz, P. Gondoin, European Space Research and Technology Ctr. (Netherlands)

7732 1E **ESA optics technology preparation for IXO [7732-49]**  
M. Bavdaz, E. Wille, K. Wallace, B. Guldemann, D. Lumb, D. Martin, N. Rando, European Space Research and Technology Ctr. (Netherlands)

7732 1F **Silicon pore x-ray optics for IXO [7732-50]**  
M. J. Collon, R. Günther, M. Ackermann, R. Partapsing, cosine Research B.V. (Netherlands); G. Vacanti, cosine Science and Computing B.V. (Netherlands); M. W. Beijersbergen, cosine Research B.V. (Netherlands); M. Bavdaz, E. Wille, K. Wallace, European Space Research and Technology Ctr. (Netherlands); M. Olde Riekerink, B. Lansdorp, L. de Vrede, Micronit Microfluidics B.V. (Netherlands); C. van Baren, SRON Netherlands Institute for Space Research (Netherlands); P. Müller, M. Krumrey, Physikalisch-Technische Bundesanstalt (Germany); M. Freyberg, Max-Planck-Institut für extraterrestrische Physik (Germany)

---

## SESSION 12 LARGE X-RAY OBSERVATORIES II

---

7732 1G **Mirror technology development for the International X-ray Observatory mission (IXO) [7732-51]**  
W. W. Zhang, M. Atanassova, NASA Goddard Space Flight Ctr. (United States); M. Biskach, NASA Goddard Space Flight Ctr. (United States) and Stinger Ghaffarian Technologies, Inc. (United States); P. N. Blake, NASA Goddard Space Flight Ctr. (United States); G. Byron, NASA Goddard Space Flight Ctr. (United States) and Stinger Ghaffarian Technologies, Inc. (United States); K. W. Chan, NASA Goddard Space Flight Ctr. (United States) and Univ. of Maryland, Baltimore County (United States); T. Evans, NASA Goddard Space Flight Ctr. (United States) and Stinger Ghaffarian Technologies, Inc. (United States); C. Fleetwood, NASA Goddard Space Flight Ctr. (United States) and Ball Aerospace & Technologies Corp. (United States); M. Hill, NASA Goddard Space Flight Ctr. (United States); M. Hong, NASA Goddard Space Flight Ctr. (United States) and Stinger Ghaffarian Technologies, Inc. (United States); L. Jalota, NASA Goddard Space Flight Ctr. (United States) and Univ. of Maryland, Baltimore County (United States); L. Kolos, NASA Goddard Space Flight Ctr. (United States); J. M. Mazarella, R. McClelland, L. Olsen, NASA Goddard Space Flight Ctr. (United States) and Stinger Ghaffarian Technologies, Inc. (United States); R. Petre, D. Robinson, T. T. Saha, NASA Goddard Space Flight Ctr. (United States); M. Sharpe, NASA Goddard Space Flight Ctr. (United States) and Stinger Ghaffarian Technologies, Inc. (United States); M. V. Gubarev, W. D. Jones, T. Kester, S. L. O'Dell, NASA Marshall Space Flight Ctr. (United States); D. Caldwell, W. Davis, M. Freeman, W. Podgorski, P. B. Reid, S. Romaine, Smithsonian Astrophysical Observatory (United States)

7732 1H **The x-ray microcalorimeter spectrometer onboard of IXO [7732-52]**  
J. W. den Herder, SRON Netherlands Institute for Space Research (Netherlands); R. L. Kelley, NASA Goddard Space Flight Ctr. (United States); K. Mitsuda, Institute of Space and Astronautical Science (Japan); L. Piro, INAF - IASF Roma (Italy); S. R. Bandler, NASA Goddard Space Flight Ctr. (United States); P. Bastia, Thales Alenia Space Italia S.p.A. (Italy); K. R. Boyce, NASA Goddard Space Flight Ctr. (United States); M. Bruin, SRON Netherlands Institute for Space Research (Netherlands); J. A. Chervenak, NASA Goddard Space Flight Ctr. (United States); L. Colasanti, INAF - IASF Roma (Italy); W. B. Doriese, National Institute of Standards and Technology (United States); M. DiPirro, M. E. Eckart, NASA Goddard Space Flight Ctr. (United States); Y. Ezoe, Tokyo Metropolitan Univ. (Japan); E. Figueroa-Feliciano, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); L. Ferrari, NASA Goddard Space Flight Ctr. (Italy); R. Fujimoto, Kanazawa Univ. (Japan); F. Gatti, Istituto Nazionale di Fisica Nucleare, Univ. degli Studi di Genova (Italy); K. C. Gendreau, NASA Goddard Space Flight Ctr. (United States); L. Gottardi,

R. den Hartog, SRON Netherlands Institute for Space Research (Netherlands); G. C. Hilton, NASA Goddard Space Flight Ctr. (United States); H. Hoevers, SRON Netherlands Institute for Space Research (Netherlands); K. D. Irwin, National Institute of Standards and Technology (United States); Y. Ishisaki, Tokyo Metropolitan Univ. (Japan); A. Kashani, NASA Ames Research Ctr. (United States); C. A. Kilbourne, NASA Goddard Space Flight Ctr. (United States); P. de Korte, J. van der Kuur, SRON Netherlands Institute for Space Research (Netherlands); C. Macculi, INAF - IASF Roma (Italy); T. Mineo, INAF - IASF Palermo (Italy); J. H. Nieland, SRON Netherlands Institute for Space Research (Netherlands); T. Ohashi, Tokyo Metropolitan Univ. (Japan); S. Paltani, Univ. of Geneva (Switzerland); E. Perinati, INAF - IASF Palermo (Italy); F. S. Porter, P. J. Shirron, S. J. Smith, NASA Goddard Space Flight Ctr. (United States); Y. Takei, Institute of Space and Astronautical Science (Japan); M. Tashiro, Saitama Univ. (Japan); G. Torrioli, Istituto di Fotonica e Nanotecnologie (Italy); M. Tsujimoto, Institute of Space and Astronautical Science (Japan); H. van Weers, SRON Netherlands Institute for Space Research (Netherlands); N. Y. Yamasaki, Institute of Space and Astronautical Science (Japan)

7732 1I **The wide-field imager for IXO: status and future activities** [7732-53]

L. Strüder, F. Aschauer, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); M. Bautz, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); L. Bombelli, Politecnico di Milano (Italy); D. Burrows, The Pennsylvania State Univ. (United States); C. Fiorini, Politecnico di Milano (Italy); G. Fraser, Univ. of Leicester (United Kingdom); S. Herrmann, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); E. Kendziorra, Eberhard Karls Univ. Tübingen (Germany); M. Kuster, XFEL GmbH (Germany); T. Lauf, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); P. Lechner, G. Lutz, P. Majewski, PNSensor GmbH (Germany); A. Meuris, M. Porro, J. Reiffers, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); R. Richter, Max-Planck-Institut Halbleiterlabor (Germany) and Max-Planck-Institut für Physik (Germany); A. Santangelo, Eberhard Karls Univ. Tübingen (Germany); H. Soltau, PNSensor GmbH (Germany); A. Stefanescu, Max-Planck-Institut Halbleiterlabor (Germany) and Johannes Gutenberg Univ. Mainz (Germany); C. Tenzer, Eberhard Karls Univ. Tübingen (Germany); J. Treis, Max-Planck-Institut Halbleiterlabor (Germany) and Max-Planck-Institut für Sonnensystemforschung (Germany); H. Tsunemi, Osaka Univ. (Japan); G. de Vita, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); J. Wilms, Erlangen Ctr. for Astroparticle Physics (Germany)

7732 1J **Critical-angle transmission grating spectrometer for high-resolution soft x-ray spectroscopy on the International X-ray Observatory** [7732-54]

R. K. Heilmann, J. E. Davis, D. Dewey, M. W. Bautz, R. Foster, A. Bruccoleri, P. Mukherjee, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); D. Robinson, NASA Goddard Space Flight Ctr. (United States); D. P. Huenemoerder, H. L. Marshall, M. L. Schattenburg, N. S. Schulz, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); L. J. Guo, A. F. Kaplan, Univ. of Michigan (United States); R. B. Schweikart, Ball Aerospace & Technologies Corp. (United States)

7732 1K **Developments of the off-plane x-ray grating spectrometer for IXO** [7732-55]

R. L. McEntaffer, The Univ. of Iowa (United States); N. J. Murray, A. D. Holland, J. Tutt, S. J. Barber, R. Harriss, The Open Univ. (United Kingdom); T. Schultz, The Univ. of Iowa (United States)

States); S. Casement, C. Lillie, D. Dailey, T. Johnson, R. Danner, Northrop Grumman Aerospace Systems (United States); W. Cash, B. Zeiger, A. Shipley, Univ. of Colorado at Boulder (United States); M. Page, D. Walton, Univ. College London (United Kingdom); P. Pool, J. Endicott, e2v technologies plc (United Kingdom); D. Willingale, Univ. of Leicester (United Kingdom)

7732 1L **The hard x-ray imager onboard IXO** [7732-56]  
K. Nakazawa, The Univ. of Tokyo (Japan); T. Takahashi, The Univ. of Tokyo (Japan) and Japan Aerospace Exploration Agency (Japan); O. Limousin, IRFU, Service d'Astrophysique, CEA Saclay (France); M. Kokubun, S. Watanabe, Japan Aerospace Exploration Agency (Japan); P. Laurent, M. Arnaud, IRFU, Service d'Astrophysique, CEA Saclay (France); H. Tajima, Stanford Univ. (United States)

7732 1M **The High Time Resolution Spectrometer (HTRS) aboard the International X-ray Observatory (IXO)** [7732-57]  
D. Barret, L. Ravera, Ctr. d'Etude Spatiale des Rayonnements (France); P. Bodin, Ctr. National d'Etudes Spatiales (France); C. Amoros, M. Boutelier, J.-M. Glorian, O. Godet, G. Orttner, K. Lacombe, R. Pons, D. Rambaud, P. Ramon, S. Ramchoun, Ctr. d'Etude Spatiale des Rayonnements (France); J.-M. Biffi, M. Belasic, R. Clédassou, D. Faye, B. Pouilloux, Ctr. National d'Etudes Spatiales (France); C. Motch, L. Michel, Observatoire Astronomique de Strasbourg (France); P. H. Lechner, A. Niculae, PNSensor GmbH (Germany); L. W. Strueder, Max-Planck-Institut für extraterrestrische Physik (Germany); G. Distratis, E. Kendziorra, A. Santangelo, C. Tenzer, H. Wende, Institut für Astronomie und Astrophysik (Germany); J. Wilms, I. Kreykenbohm, C. Schmid, Dr. Remeis-Observatory (Germany); S. Paltani, F. Cadoux, ISDC, Geneva Observatory (Switzerland); C. Fiorini, L. Bombelli, Politecnico di Milano (Italy); M. Méndez, Kapteyn Astronomical Institute (Netherlands); S. Mereghetti, INAF - IASF Milano (Italy)

---

## SESSION 13 LOW-TEMPERATURE DETECTORS

---

7732 1O **MIS  $\mu$ -calorimeters arrays: an alternative to IXO/XMS TES/Squids baseline** [7732-59]  
A. Aliane, Commissariat à l'Énergie Atomique (France); J. L. Sauvageot, DSM/IRFU/Service d'Astrophysique, CEA (France); X. de la Broïse, DSM/IRFU/SEDI, CEA (France); C. Pigot, J. Martignac, DSM/IRFU/Service d'Astrophysique, CEA (France); E. Grémion, DSM/IRFU/SEDI, CEA (France); V. Szeflinski, DSM/IRFU/Service d'Astrophysique, CEA (France); J. Goupy, P. Agnese, Commissariat à l'Énergie Atomique (France)

7732 1P **Progress on the Micro-X sounding rocket x-ray telescope: completion of flight hardware** [7732-60]  
P. Wikus, Massachusetts Institute of Technology (United States); J. S. Adams, R. Baker, S. R. Bandler, NASA Goddard Space Flight Ctr. (United States); W. Brys, D. Dewey, Massachusetts Institute of Technology (United States); W. B. Doriese, National Institute of Standards and Technology (United States); M. E. Eckart, NASA Goddard Space Flight Ctr. (United States); E. Figueroa-Feliciano, R. Goeke, Massachusetts Institute of Technology (United States); R. Hamersma, Univ. of Florida (United States); G. C. Hilton, National Institute of Standards and Technology (United States); U. Hwang, NASA Goddard Space Flight Ctr. (United States); K. D. Irwin, National Institute of Standards and Technology (United States); R. L. Kelley, C. A. Kilbourne, NASA Goddard Space Flight Ctr. (United States); S. W. Leman, Massachusetts Institute of Technology (United States); D. McCammon, Univ. of Wisconsin-Madison (United States); T. Okajima, NASA Goddard Space Flight Ctr. (United States); R. H. O'Neal, Jr., Massachusetts Institute of Technology (United States); F. S. Porter,



NASA Goddard Space Flight Ctr. (United States); C. D. Reintsema, National Institute of Standards and Technology (United States); J. M. Rutherford, Massachusetts Institute of Technology (United States); P. Serlemitsos, NASA Goddard Space Flight Ctr. (United States); T. Saab, Univ. of Florida (United States); K. Sato, Massachusetts Institute of Technology (United States); Y. Soong, NASA Goddard Space Flight Ctr. (United States); S. N. Trowbridge, Massachusetts Institute of Technology (United States)

---

**SESSION 14 NEW X-RAY/GAMMA-RAY MISSIONS I**

---

- 7732 1R **Results from the Extended X-ray Off-plane Spectrometer (EXOS) sounding rocket payload** [7732-62]  
P. Oakley, B. Zeiger, M. Kaiser, A. Shipley, W. Cash, Ctr. for Astrophysics and Space Astronomy, Univ. of Colorado at Boulder (United States); R. McEntaffer, T. Schultz, The Univ. of Iowa (United States)
- 7732 1S **DIOS: the diffuse intergalactic oxygen surveyor: status and prospects** [7732-63]  
T. Ohashi, Y. Ishisaki, Y. Ezoe, S. Sasaki, H. Kawahara, Tokyo Metropolitan Univ. (Japan); K. Mitsuda, N. Y. Yamasaki, Y. Takei, M. Ishida, Japan Aerospace Exploration Agency (Japan); Y. Tawara, I. Sakurai, A. Furuzawa, Nagoya Univ. (Japan); Y. Suto, The Univ. of Tokyo (Japan); K. Yoshikawa, Univ. of Tsukuba (Japan); N. Kawai, Tokyo Institute of Technology (Japan); R. Fujimoto, Kanazawa Univ. (Japan); T. G. Tsuru, Kyoto Univ. (Japan); K. Matsushita, Tokyo Univ. of Science (Japan); T. Kitayama, Toho Univ. (Japan)
- 7732 1T **Xenia: cosmo-chemical evolution of the Universe** [7732-64]  
D. N. Burrows, The Pennsylvania State Univ. (United States); D. Hartmann, Clemson Univ. (United States); C. Kouvelioutou, NASA Marshall Space Flight Ctr. (United States); L. Piro, INAF - IASF Roma (Italy); J.-W. den Herder, SRON Netherlands Institute for Space Research (Netherlands); T. Ohashi, Tokyo Metropolitan Univ. (Japan)
- 7732 1U **JANUS: exploring the high redshift universe** [7732-65]  
D. N. Burrows, The Pennsylvania State Univ. (United States); P. W. A. Roming, Southwest Research Institute (United States); D. B. Fox, The Pennsylvania State Univ. (United States); T. L. Herter, Cornell Univ. (United States); A. Falcone, S. Bilén, J. A. Nousek, J. A. Kennea, The Pennsylvania State Univ. (United States)
- 7732 1V **LOFT: a large observatory for x-ray timing** [7732-66]  
M. Feroci, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); L. Stella, Osservatorio Astronomico di Roma (Italy); A. Vacchi, Istituto Nazionale di Fisica Nucleare (Italy); C. Labanti, INAF - IASF Bologna (Italy); M. Rapisarda, ENEA Frascati (Italy), INAF - IASF Roma (Italy), and Istituto Nazionale di Fisica Nucleare (Italy); P. Attinà, Thales Alenia Space Italia S.p.A. (Italy); T. Belloni, Osservatorio Astronomico di Brera (Italy); R. Campana, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); S. Campana, Osservatorio Astronomico di Brera (Italy); E. Costa, INAF - IASF Roma (Italy); E. Del Monte, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); I. Donnarumma, INAF - IASF Roma (Italy); Y. Evangelista, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); G. L. Israel, Osservatorio Astronomico di Roma (Italy); F. Muleri, INAF - IASF Roma (Italy); P. Porta, Thales Alenia Space Italia S.p.A. (Italy); A. Rashevsky, G. Zampa, N. Zampa, Istituto Nazionale di Fisica Nucleare (Italy); G. Baldazzi, Univ. degli Studi di Bologna (Italy); G. Bertuccio, Politecnico di Milano (Italy); V. Bonvicini, Istituto Nazionale di Fisica Nucleare (Italy); E. Bozzo, ISDC (Switzerland); L. Burderi, Univ. degli Studi di Cagliari (Italy); A. Corongiu, Osservatorio Astronomico di Cagliari (Italy); S. Covino, Osservatorio

Astronomico di Brera (Italy); S. Dall'Osso, Osservatorio Astronomico di Roma (Italy); D. de Martino, Osservatorio Astronomico di Capodimonte (Italy); S. Di Cosimo, G. Di Persio, INAF - IASF Roma (Italy); T. Di Salvo, Univ. degli Studi di Palermo (Italy); F. Fuschino, INAF - IASF Bologna (Italy); M. Grassi, Univ. degli Studi di Pavia (Italy); F. Lazzarotto, INAF - IASF Roma (Italy); P. Malcovati, Univ. degli Studi di Pavia (Italy); M. Marisaldi, INAF - IASF Bologna (Italy); M. Mastropietro, INAF - IASF Roma (Italy); S. Mereghetti, INAF - IASF Milano (Italy); E. Morelli, INAF - IASF Bologna (Italy); M. Orio, Osservatorio Astronomico di Torino (Italy); A. Pellizzoni, Osservatorio Astronomico di Cagliari (Italy); L. Pacciani, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); A. Papitto, Univ. degli Studi di Cagliari (Italy) and Osservatorio Astronomico di Cagliari (Italy); L. Picolli, Univ. degli Studi di Pavia (Italy); A. Possenti, Osservatorio Astronomico di Cagliari (Italy); A. Rubini, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); P. Soffitta, INAF, Istituto di Astrofisica Spaziale e Fisica Cosmica, Roma (Italy); R. Turolla, Univ. degli Studi di Padova (Italy); L. Zampieri, Osservatorio Astronomico di Padova (Italy)

7732 1W

**Wide Field X-ray Telescope: a moderate class mission** [7732-67]

S. S. Murray, Harvard-Smithsonian Ctr. for Astrophysics (United States) and The Johns Hopkins Univ. (United States); R. Giacconi, A. Ptak, The Johns Hopkins Univ. (United States); P. Rosati, European Southern Observatory (Germany); M. Weisskopf, NASA Marshall Space Flight Ctr. (United States); S. Borgani, Univ. of Trieste (Italy); C. Jones, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Pareschi, Osservatorio Astronomico di Brera (Italy); P. Tozzi, R. Gilli, Osservatorio Astronomico di Trieste (Italy); S. Campana, Osservatorio Astronomico di Brera (Italy); M. Paolillo, Univ. of Naples (Italy); G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); M. Bautz, Massachusetts Institute of Technology (United States); A. Vikhlinin, Harvard-Smithsonian Ctr. for Astrophysics (United States); R. Hickox, Harvard-Smithsonian Ctr. for Astrophysics (United States) and Durham Univ. (United Kingdom); W. Forman, Harvard-Smithsonian Ctr. for Astrophysics (United States)

**SESSION 15**

**NEW X-RAY/GAMMA-RAY MISSIONS II**

7732 1X

**Overview of EXIST mission science and implementation** [7732-68]

J. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (United States); N. Gehrels, NASA Goddard Space Flight Ctr. (United States); J. Bloom, Univ. of California, Berkeley (United States); P. Coppi, Yale Univ. (United States); A. Soderberg, J. Hong, B. Allen, Harvard-Smithsonian Ctr. for Astrophysics (United States); S. Barthelmy, NASA Goddard Space Flight Ctr. (United States); G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); H. Moseley, A. Kutyrev, NASA Goddard Space Flight Ctr. (United States); G. Fabbiano, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Fishman, B. Ramsey, NASA Marshall Space Flight Ctr. (United States); R. Della Ceca, Osservatorio Astronomico di Brera (United States); L. Natalucci, P. Ubertini III, INAF - IASF Roma (Italy)

7732 1Y

**The proposed high-energy telescope (HET) for EXIST** [7732-69]

J. Hong, J. Grindlay, B. Allen, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Skinner, S. Barthelmy, N. Gehrels, NASA Goddard Space Flight Ctr. (United States); A. Garson, H. Krawczynski, Washington Univ. in St. Louis (United States); W. Cook, F. Harrison, California Institute of Technology (United States); L. Natalucci, P. Ubertini, INAF - IASF Roma (Italy)

7732 1Z

**Design and scientific performance of the soft x-ray imager on board EXIST** [7732-70]

L. Natalucci, INAF - IASF Roma (Italy); G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); A. Bazzano, INAF - IASF Roma (Italy); P. Caraveo, INAF - IASF Milano (Italy); R. Della Ceca,

Osservatorio Astronomico di Brera (Italy); J. E. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Pareschi, Osservatorio Astronomico di Brera (Italy); B. D. Ramsey, NASA Marshall Space Flight Ctr. (United States); P. Ubertini, INAF - IASF Roma (Italy); M. C. A. Uslenghi, INAF - IASF Milano (Italy)

- 7732 20 **EXIST deep observations of the Galactic Center Region [7732-71]**  
M. Fiocchi, L. Natalucci, INAF - IASF Roma (Italy); J. E. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (United States); P. Ubertini, A. Bazzano, INAF - IASF Roma (Italy)

---

**SESSION 16 NEW X-RAY/GAMMA-RAY MISSIONS III**

- 7732 21 **Development of the Advance Energetic Pair Telescope (AdEPT) for medium-energy gamma-ray astronomy [7732-72]**  
S. D. Hunter, NASA Goddard Space Flight Ctr. (United States); P. F. Bloser, The Univ. of New Hampshire (United States); M. P. Dion, NASA Goddard Space Flight Ctr. (United States); M. L. McConnell, The Univ. of New Hampshire (United States); G. A. de Nolfo, S. Son, NASA Goddard Space Flight Ctr. (United States); J. M. Ryan, The Univ. of New Hampshire (United States); F. W. Stecker, NASA Goddard Space Flight Ctr. (United States)
- 7732 22 **A fast scintillator Compton telescope for medium-energy gamma-ray astronomy [7732-73]**  
P. F. Bloser, J. M. Ryan, J. S. Legere, M. Julien, C. M. Bancroft, M. L. McConnell, The Univ. of New Hampshire (United States); M. Wallace, R. M. Kippen, S. Tornga, Los Alamos National Lab. (United States)
- 7732 23 **Balloon-borne sub-MeV/MeV gamma-ray observation using a Compton camera with a gaseous TPC and scintillation camera [7732-74]**  
S. Kurosawa, H. Kubo, K. Hattori, C. Ida, S. Iwaki, N. Higashi, S. Kabuki, Y. Kishimoto, K. Miuchi, K. Nakamura, H. Nishimura, J. D. Parker, T. Sawano, Kyoto Univ. (Japan); A. Takada, Japan Aerospace Exploration Agency (Japan); M. Takahashi, T. Tanimori, K. Taniue, K. Ueno, Kyoto Univ. (Japan)
- 7732 24 **The 2010 balloon campaign of the Nuclear Compton Telescope [7732-75]**  
E. C. Bellm, Univ. of California, Berkeley (United States); J.-L. Chiu, National Tsing Hua Univ. (Taiwan); S. E. Boggs, Univ. of California, Berkeley (United States); H.-K. Chang, National Tsing Hua Univ. (Taiwan); Y.-H. Chang, National Central Univ. (Taiwan); M. A. Huang, National United Univ. (Taiwan); M. Amman, Lawrence Berkeley National Lab. (United States); M. S. Bandstra, Univ. of California, Berkeley (United States); W.-C. Hung, National Central Univ. (Taiwan); P. Jean, Ctr. d'Etude Spatiale des Rayonnements (France); J.-S. Liang, National Tsing Hua Univ. (Taiwan); C.-H. Lin, Institute of Physics (Taiwan); Z.-K. Liu, National Central Univ. (Taiwan); P. N. Luke, Lawrence Berkeley National Lab. (United States); D. Perez-Becker, Univ. of California, Berkeley (United States); R.-S. Run, National United Univ. (Taiwan); A. Zoglauer, Univ. of California, Berkeley (United States)
- 7732 25 **The scientific and technical drivers of ECLAIRs: the x- and gamma-ray telescope onboard the GRB mission SVOM [7732-76]**  
H. Triou, A. Sauvageon, B. Cordier, D. Götz, S. Schanne, IRFU, Service d'Astrophysique, CEA Saclay (France); P. Mandrou, R. Pons, O. Godet, N. Remoué, D. Barret, Ctr. d'Etude Spatiale des Rayonnements (France); J. Atteia, Observatoire Midi-Pyrénées (France); F. Gonzalez, M. Jouret, Le Ctr. Spatiale de Toulouse, CNES (France); C. Lachaud, AstroParticule et Cosmologie (France)

- 7732 26 **Development of efficient Laue lenses: experimental results and projects** [7732-77]  
N. Barriere, J. Tomsick, S. Boggs, Univ. of California, Berkeley (United States); J. Rousselle, P. von Ballmoos, Ctr. d'Etude Spatiale de Rayonnements (France)

---

**POSTER SESSION: UV MISSIONS AND TECHNOLOGY**

---

- 7732 27 **FIREBALL : the first ultraviolet fiber fed spectrograph** [7732-78]  
S. E. Tuttle, D. Schiminovich, Columbia Univ. (United States); R. Grange, Lab. d'Astrophysique de Marseille (France); S. Rahman, M. Matuszewski, California Institute of Technology (United States); B. Milliard, J.-M. Deharveng, Lab. d'Astrophysique de Marseille (France); D. C. Martin, California Institute of Technology (United States)
- 7732 28 **FIREBALL: detector, data acquisition and reduction** [7732-79]  
S. Rahman, M. Matuszewski, California Institute of Technology (United States); S. E. Tuttle, Columbia Univ. (United States); D. Vibert, B. Milliard, Lab. d'Astrophysique de Marseille (France); D. Schiminovich, Columbia Univ. (United States); D. C. Martin, California Institute of Technology (United States); S. Frank, Lab. d'Astrophysique de Marseille (France); J. Evrard, F. Mirc, Ctr. National d'Etudes Spatiales (France)
- 7732 29 **FIREBALL: instrument pointing and aspect reconstruction** [7732-80]  
M. Matuszewski, California Institute of Technology (United States); J. Evrard, F. Mirc, Ctr. National d'Études Spatiales (France); R. Grange, S. Frank, B. Milliard, Lab. d'Astrophysique de Marseille (France); S. E. Tuttle, Columbia Univ. (United States); S. Rahman, D. C. Martin, California Institute of Technology (United States); D. Schiminovich, Columbia Univ. (United States); R. McLean, California Institute of Technology (United States); R. G. Chave, Robert Chave Applied Physics Inc. (United States)
- 7732 2A **Earth-orbiting extreme ultraviolet spectroscopic imaging mission for planetary space science** [7732-81]  
K. Sakai, G. Murakami, G. Ogawa, T. Homma, I. Yoshikawa, The Univ. of Tokyo (Japan); K. Yoshioka, Rikkyo Univ. (Japan); M. Ueno, A. Yamazaki, K. Uemizu, Japan Aerospace Exploration Agency (Japan); M. Kagitani, F. Tsuchiya, N. Terada, Tohoku Univ. (Japan)
- 7732 2B **Efficient EUV transmission gratings for plasma diagnostics** [7732-82]  
C. Braig, E.-B. Kley, Friedrich-Schiller-Univ. Jena (Germany)

## Part Two

- 7732 2C **Description and ray-tracing simulations of HYPE: a far-ultraviolet polarimetric spatial-heterodyne spectrometer** [7732-83]  
Y. Bétrémieux, Univ. of California, Davis (United States); J. Corliss, Univ. of Wisconsin-Madison (United States); M. B. Vincent, Univ. of California, Davis (United States); F. E. Vincent, Univ. of California, Davis (United States) and Institut d'Astrophysique de Paris (France); F. L. Roesler, Univ. of Wisconsin-Madison (United States); W. M. Harris, Univ. of California, Davis (United States)

- 7732 2D **Fresnel diffractive imager: instrument for space mission in the visible and UV** [7732-85]  
T. Raksasataya, P. Deba, Lab. d'Astrophysique de Toulouse et Tarbes, CNRS, Univ. Paul Sabatier (France); J. P. Rivet, R. Gili, Observatoire de la Côte d'Azur (France); D. Serre, L. Koechlin, Lab. d'Astrophysique de Toulouse et Tarbes, CNRS, Univ. Paul Sabatier (France)
- 7732 2E **It's time for a new EUV orbital mission** [7732-86]  
M. P. Kowalski, K. S. Wood, U.S. Naval Research Lab. (United States); M. A. Barstow, Univ. of Leicester (United Kingdom); R. G. Cruddace, U.S. Naval Research Lab. (United States)
- 7732 2F **FIRE: Far-ultraviolet Imaging Rocket Experiment: a sounding rocket telescope** [7732-87]  
B. Gantner, J. Green, M. Beasley, R. Kane, Univ. of Colorado at Boulder (United States); B. Lairson, H. Lopez, D. Grove, J. Franetic, Luxel Corp. (United States)
- 7732 2G **Improved EUV filter transmission with plasma cleaning** [7732-88]  
B. M. Lairson, D. Grove, R. Smith, H. Lopez, T. Ayers, Luxel Corp. (United States); B. L. Gantner, M. N. Beasley, Univ. of Colorado at Boulder (United States)
- 7732 2H **Hubble Space Telescope: Cosmic Origins Spectrograph FUV detector initial on-orbit performance** [7732-89]  
J. B. McPhate, O. H. Siegmund, J. V. Vallerga, Univ. of California, Berkeley (United States); D. J. Sahnou, The Johns Hopkins Univ. (United States) and Space Telescope Science Institute (United States); T. B. Ake, Space Telescope Science Institute (United States); S. V. Penton, K. France, Univ. of Colorado at Boulder (United States); D. Massa, Space Telescope Science Institute (United States); S. N. Osterman, S. Béland, Univ. of Colorado at Boulder (United States); S. R. McCandliss, The Johns Hopkins Univ. (United States)

---

**POSTER SESSION: X-RAY OBSERVATORIES AND OPTICS**

- 7732 2I **Using ACIS on the Chandra X-ray Observatory as a particle radiation monitor** [7732-90]  
C. E. Grant, B. LaMarr, M. W. Bautz, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); S. L. O'Dell, NASA Marshall Space Flight Ctr. (United States)
- 7732 2J **On-orbit calibration status of the hard x-ray detector (HXD) onboard Suzaku** [7732-91]  
S. Nishino, Y. Fukazawa, T. Mizuno, H. Takahashi, K. Hayashi, K. Hiragi, M. Mizuno, Hiroshima Univ. (Japan); S. Yamada, The Univ. of Tokyo (Japan); M. Kawaharada, M. Kokubun, Japan Aerospace Exploration Agency (Japan); K. Nakazawa, The Univ. of Tokyo (Japan); S. Watanabe, Japan Aerospace Exploration Agency (Japan); T. Tanaka, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Terada, Saitama Univ. (Japan)
- 7732 2K **Computation of the off-axis effective area of the New Hard X-ray Mission modules by means of an analytical approach** [7732-92]  
D. Spiga, V. Cotroneo, Osservatorio Astronomico di Brera (Italy)
- 7732 2L **Methods of optimizing x-ray optical prescriptions for wide-field applications** [7732-93]  
R. F. Elsner, S. L. O'Dell, B. D. Ramsey, M. C. Weisskopf, NASA Marshall Space Flight Ctr. (United States)

- 7732 2M **Multiband imaging with Fresnel x-ray telescopes** [7732-94]  
C. Braig, Friedrich-Schiller-Univ. Jena (Germany); P. Predehl, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 7732 2N **Fresnel lens arrays for x-ray imaging spectroscopy** [7732-95]  
C. Braig, Friedrich-Schiller-Univ. Jena (Germany); P. Predehl, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 7732 2O **High-energy astrophysics at the diffraction limit** [7732-96]  
C. Braig, Friedrich-Schiller-Univ. Jena (Germany); P. Predehl, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 7732 2P **Effects of the coating optimization on the field of view for a Wolter x-ray telescope** [7732-97]  
V. Cotroneo, G. Pareschi, D. Spiga, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy)
- 7732 2Q **Self-consistent computation of x-ray mirror point spread functions from surface profile and roughness** [7732-98]  
L. Raimondi, Univ. degli Studi dell'Insubria (Italy) and Osservatorio Astronomico di Brera (Italy); D. Spiga, Osservatorio Astronomico di Brera (Italy)
- 7732 2R **Thin gold layer in NiCo and Ni electroforming process: optical surface characterization** [7732-99]  
G. Sironi, Osservatorio Astronomico di Brera (Italy), Univ. degli Studi dell'Insubria (Italy), and Media Lario Technologies (Italy); D. Spiga, L. Raimondi, G. Pareschi, Osservatorio Astronomico di Brera, (Italy); A. Orlandi, G. Borghi, N. Missaglia, Media Lario Technologies (Italy); B. Negri, Agenzia Spaziale Italiana (Italy)
- 7732 2S **Wavefront sensing of x-ray telescopes** [7732-100]  
T. Saha, S. Rohrbach, T. Hadjimichael, W. W. Zhang, NASA Goddard Space Flight Ctr. (United States)
- 7732 2T **Improving the ruggedness of silicon pore optics** [7732-103]  
M. D. Ackermann, M. J. Collon, R. Günther, R. Partapsing, cosine Research B.V. (Netherlands); M. Bavdaz, K. Wallace, E. Wille, European Space Research and Technology Ctr. (Netherlands); C. van Baren, SRON Netherlands Institute for Space Research (Netherlands); D. Kampf, M. Erhard, Kayser-Threde GmbH (Germany)
- 7732 2U **Lunar liquid mirror telescope: structural concepts** [7732-104]  
P. Klimas, N. Rowlands, COM DEV Space Systems (Canada); P. Hickson, The Univ. of British Columbia (Canada); E. F. Borra, S. Thibault, Univ. Laval (Canada)
- 7732 2V **Effects of contamination upon the performance of x-ray telescopes** [7732-105]  
S. L. O'Dell, R. F. Elsner, NASA Marshall Space Flight Ctr. (United States); T. Oosterbroek, European Space Research and Technology Ctr. (Netherlands)

---

**POSTER SESSION: X-RAY POLARIMETRY**

- 7732 2Y **Soft x-ray polarimeter laboratory tests** [7732-108]  
K. D. Murphy, H. L. Marshall, N. S. Schulz, K. Jenks, Massachusetts Institute of Technology (United States); S. J. B. Sommer, Colgate Univ. (United States); E. A. Marshall, The Univ. of New Hampshire (United States)

- 7732 27 **A negative ion time projection chamber x-ray polarimeter for transient sources** [7732-109]  
Z. R. Prieskorn, The Univ. of Iowa (United States); J. K. Black, NASA Goddard Space Flight Ctr. (United States) and Rock Creek Scientific (United States); J. E. Hill, CRESST, Universities Space Research Association (United States) and NASA Goddard Space Flight Ctr. (United States); M. J. Strube, NASA Goddard Space Flight Ctr. (United States); C. E. Urba, CRESST, Universities Space Research Association (United States); K. M. Jahoda, NASA Goddard Space Flight Ctr. (United States); P. E. Kaaret, The Univ. of Iowa (United States)

---

**POSTER SESSION: GAMMA-RAY OBSERVATORIES**

---

- 7732 30 **Rolling and tumbling: status of the SuperAGILE experiment** [7732-110]  
E. Del Monte, E. Costa, G. Di Persio, I. Donarumma, Y. Evangelista, M. Feroci, I. Lapshov, F. Lazzarotto, INAF - IASF Roma (Italy); M. Mastropietro, INAF - IASF Roma (Italy) and IMIP, CNR (Italy); E. Morelli, INAF - IASF Bologna (Italy); L. Pacciani, INAF - IASF Roma (Italy); M. Rapisarda, ENEA (Italy); A. Rubini, P. Soffitta, M. Tavani, A. Argan, A. Trois, INAF - IASF Roma (Italy)
- 7732 32 **SIDERALE and BIT: a small stratospheric balloon experiment for polar gamma background** [7732-174]  
M. Alderighi, INAF - IASF Milano (Italy); E. Caroli, INAF - IASF Bologna (Italy); F. Casini, INAF - IASF Milano (Italy) and Sanitas EG s.r.l. (Italy); S. Cortiglioni, INAF - IASF Bologna (Italy); S. D'Angelo, INAF - IASF Milano (Italy); S. Del Sordo, INAF - IASF Palermo (Italy); M. Fiorini, INAF - IASF Milano (Italy); M. Mancini, INAF - IASF Milano (Italy) and Sanitas EG s.r.l. (Italy); L. Natalucci, INAF - IASF Roma (Italy); E. M. Quadri, INAF - IASF Milano (Italy); E. Ronchi, LEN s.r.l. (Italy); G. Sorrenti, Sanitas EG s.r.l. (Italy); M. Uslenghi, INAF - IASF Milano (Italy)

---

**SESSION 22 POSTER SESSION: SOLAR MISSIONS AND TECHNOLOGIES**

---

- 7732 33 **Stigmatic grazing-incidence x-ray spectrograph for solar coronal observations** [7732-112]  
K. Kobayashi, The Univ. of Alabama in Huntsville (United States); J. Cirtain, NASA Marshall Space Flight Ctr. (United States); L. Golub, K. Korreck, P. Cheimets, E. Hertz, D. Caldwell, Harvard-Smithsonian Ctr. for Astrophysics (United States)
- 7732 36 **Definition of an imaging spectrometer meeting the needs of UV solar physics** [7732-176]  
C. Ruiz de Galarreta Fanjul, A. Philippon, J.-C. Vial, P. Lemaire, Institut d'Astrophysique Spatiale (France); J.-P. Maillard, Institut d'Astrophysique de Paris (France); C. Buisset, Thales Alenia Space (France); T. Appourchaux, F. Auchère, Institut d'Astrophysique Spatiale (France)
- 7732 37 **A novel forward-model technique for estimating EUV imaging performance: design and analysis of the SUVI telescope** [7732-177]  
D. Martínez-Galarce, Lockheed Martin Advanced Technology Ctr. (United States); J. Harvey, The College of Optics and Photonics, Univ. of Central Florida (United States); M. Bruner, Berman Science & Technology (United States); J. Lemen, Lockheed Martin Advanced Technology Ctr. (United States); E. Gullikson, Lawrence Berkeley National Lab. (United States); R. Soufli, Lawrence Livermore National Lab. (United States); E. Prast, S. Khatri, L-3 Communications Tinsley Labs. Inc. (United States)

- 7732 38 **High-spectral resolution high-cadence imaging x-ray microcalorimeters for solar physics** [7732-178]  
S. R. Bandler, NASA Goddard Space Flight Ctr. (United States) and CRESST, Univ. of Maryland, College Park (United States); C. N. Bailey, NASA Goddard Space Flight Ctr. (United States); J. A. Bookbinder, E. E. DeLuca, Harvard-Smithsonian Ctr. for Astrophysics (United States); J. A. Chervenak, M. E. Eckart, NASA Goddard Space Flight Ctr. (United States); F. M. Finkbeiner, NASA Goddard Space Flight Ctr. (United States) and Wyle Information Systems Inc. (United States); D. P. Kelley, NASA Goddard Space Flight Ctr. (United States) and MEI Technologies (United States); R. L. Kelley, C. A. Kilbourne, F. S. Porter, NASA Goddard Space Flight Ctr. (United States); J. E. Sadleir, NASA Goddard Space Flight Ctr. (United States) and Univ. of Illinois Urbana-Champaign (United States); S. J. Smith, NASA Goddard Space Flight Ctr. (United States) and CRESST, Univ. of Maryland, Baltimore County (United States); R. K. Smith, Harvard-Smithsonian Ctr. for Astrophysics (United States)

---

**POSTER SESSION: MEDIUM X-RAY OBSERVATORIES**

---

- 7732 39 **The Monte Carlo simulation framework of the ASTRO-H X-ray Observatory** [7732-115]  
M. Ozaki, M. Ohno, Japan Aerospace Exploration Agency (Japan); Y. Terada, Saitama Univ. (Japan); S. Watanabe, Japan Aerospace Exploration Agency (Japan); T. Mizuno, Hiroshima Univ. (Japan); T. Takahashi, M. Kokubun, M. Tsujimoto, N. Y. Yamasaki, H. Odaka, Y. Takei, Japan Aerospace Exploration Agency (Japan); T. Yuasa, The Univ. of Tokyo (Japan); A. Furuzawa, H. Mori, H. Matsumoto, Nagoya Univ. (Japan); T. Okajima, C. A. Kilbourne, NASA Goddard Space Flight Ctr. (United States); H. Tajima, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); Y. Ishisaki, Tokyo Metropolitan Univ. (Japan)
- 7732 3A **The thermal analysis of the Hard X-ray Telescope (HXT) and the investigation of the deformation of the mirror foil due to temperature change** [7732-116]  
K. Ito, K. Ogi, H. Awaki, Ehime Univ. (Japan); T. Kosaka, Kochi Univ. of Technology (Japan); Y. Yamamoto, Ehime Univ. (Japan)
- 7732 3B **Development of BGO active shield for the ASTRO-H soft gamma-ray detector** [7732-117]  
Y. Hanabata, Y. Fukazawa, Hiroshima Univ. (Japan); K. Yamaoka, Aoyama Gakuin Univ. (Japan); H. Tajima, Kavli Institute for Particle Astrophysics and Cosmology, Stanford Univ. (United States); J. Kataoka, Waseda Univ. (Japan); K. Nakazawa, The Univ. of Tokyo (Japan); H. Takahashi, T. Mizuno, Hiroshima Univ. (Japan); M. Ohno, M. Kokubun, T. Takahashi, S. Watanabe, Japan Aerospace Exploration Agency (Japan); M. Tashiro, Y. Terada, Saitama Univ. (Japan); C. Sasaki, Japan Aerospace Exploration Agency (Japan); K. Nakajima, The Univ. of Tokyo (Japan); T. Mizushima, Aoyama Gakuin Univ. (Japan)
- 7732 3C **Monte Carlo simulation study of in-orbit background for the soft gamma-ray detector on-board ASTRO-H** [7732-118]  
T. Mizuno, K. Hiragi, Y. Fukazawa, Y. Umeki, Hiroshima Univ. (Japan); H. Odaka, S. Watanabe, M. Kokubun, T. Takahashi, Japan Aerospace Exploration Agency (Japan); K. Nakajima, K. Nakazawa, K. Makishima, The Univ. of Tokyo (Japan); S. Nakahira, Aoyama Gakuin Univ. (Japan); Y. Terada, Saitama Univ. (Japan); H. Tajima, Stanford Univ. (United States)
- 7732 3D **Measuring the EUV and optical transmission of optical blocking layer for x-ray CCD camera** [7732-119]  
T. Kohmura, K. Kawai, T. Watanabe, T. Ogawa, S. Ikeda, K. Ushiyama, K. Kaneko, Kogakuin Univ. (Japan); S. Kitamoto, H. Murakami, E. Takenaka, K. Nagasaki, K. Higashi, M. Yoshida,



Rikkyo Univ. (Japan); H. Tsunemi, K. Hayashida, N. Anabuki, H. Nakajima, R. Sakaguchi, K. Shigeyama, S. Uega, Osaka Univ. (Japan); T. G. Tsuru, Kyoto Univ. (Japan); T. Dotani, M. Ozaki, A. Bamba, Institute of Space and Aeronautical Science (Japan); J. S. Hiraga, The Univ. of Tokyo (Japan); K. Mori, Univ. of Miyazaki (Japan)

- 7732 3E **Current status of the pre-collimator development for the ASTRO-H x-ray telescopes** [7732-120]  
H. Mori, Japan Aerospace Exploration Agency (Japan) and Nagoya Univ. (Japan); Y. Haba, T. Miyazawa, A. Furuzawa, Y. Tawara, H. Kunieda, Nagoya Univ. (Japan); S. Yamauchi, Nara Women's Univ. (Japan); H. Awaki, Ehime Univ. (Japan); M. Ishida, Y. Maeda, A. Bamba, Japan Aerospace Exploration Agency (Japan); R. Iizuka, Chuou Univ. (Japan); T. Okajima, NASA Goddard Space Flight Ctr. (United States); R. Mushotzky, Univ. of Maryland, College Park (United States)
- 7732 3F **The current status of the reflector production for ASTRO-H/HXT** [7732-121]  
A. Furuzawa, T. Miyazawa, K. Yasufumi, K. Matsuda, M. Sakai, Y. Ishida, S. Hara, K. Yamane, N. Yamane, Y. Miyata, K. Sakanobe, H. Kato, Y. Yajima, T. Watanabe, Y. Haba, Y. Tawara, H. Kunieda, K. Yamashita, Nagoya Univ. (Japan); N. Ishida, A. Suzuki, N. Ohtsu, Tamagawa Engineering Co., Ltd. (Japan); M. Ishida, Y. Maeda, H. Mori, K. Tamura, Japan Aerospace Exploration Agency (Japan); H. Awaki, Ehime Univ. (Japan); Y. Namba, Chubu Univ. (Japan); T. Okajima, NASA Goddard Space Flight Ctr. (United States)
- 7732 3G **Vibration properties of hard x-ray telescope on board satellite** [7732-122]  
T. Kosaka, Kochi Univ. of Technology (Japan); T. Igarashi, Osaka City Univ. (Japan); H. Awaki, K. Ogi, K. Itoh, Ehime Univ. (Japan); Y. Maeda, M. Ichida, Japan Aerospace Exploration Agency (Japan); A. Furuzawa, T. Miyazawa, H. Kunieda, Nagoya Univ. (Japan)
- 7732 3H **Cooling system for the soft x-ray spectrometer (SXS) onboard ASTRO-H** [7732-123]  
R. Fujimoto, Kanazawa Univ. (Japan); K. Mitsuda, N. Yamasaki, Y. Takei, M. Tsujimoto, H. Sugita, Y. Sato, K. Shinozaki, A. Okamoto, Japan Aerospace Exploration Agency (Japan); T. Ohashi, Y. Ishisaki, Y. Ezoe, K. Ishikawa, Tokyo Metropolitan Univ. (Japan); M. Murakami, Univ. of Tsukuba (Japan); S. Kitamoto, H. Murakami, Rikkyo Univ. (Japan); T. Tamagawa, M. Kawaharada, H. Yamaguchi, RIKEN (Japan); K. Sato, A. Hoshino, Kanazawa Univ. (Japan); K. Kanao, S. Yoshida, M. Miyaoka, Sumitomo Heavy Industries, Ltd. (Japan); M. DiPirro, P. Shirron, G. Sneiderman, R. L. Kelley, F. S. Porter, C. A. Kilbourne, J. Crow, A. Mattern, NASA Goddard Space Flight Ctr. (United States); A. Kashani, NASA Ames Research Ctr. (United States) and Atlas Scientific (United States); D. McCammon, Univ. of Wisconsin, Madison (United States)
- 7732 3I **Current status of hard x-ray characterization of ASTRO-H HXT at Spring-8** [7732-124]  
T. Miyazawa, A. Furuzawa, Y. Kanou, K. Matsuda, M. Sakai, N. Yamane, Y. Ishida, S. Hara, Y. Miyata, K. Sakanobe, Y. Haba, H. Matsumoto, Y. Tawara, H. Kunieda, Nagoya Univ. (Japan); H. Mori, K. Tamura, Y. Maeda, M. Ishida, Japan Aerospace Exploration Agency (Japan); H. Awaki, Ehime Univ. (Japan); T. Okajima, NASA Goddard Space Flight Ctr. (United States); K. Uesugi, Y. Suzuki, Japan Synchrotron Radiation Research Institute (Japan); N. Ishida, N. Ohtsu, A. Suzuki, Tamagawa Engineering Co., Ltd. (Japan); Y. Ogasaka, K. Yamashita, Japan Science and Technology Agency (Japan)
- 7732 3J **The detector subsystem for the SXS instrument on the ASTRO-H Observatory** [7732-125]  
F. S. Porter, J. S. Adams, NASA Goddard Space Flight Ctr. (United States); G. V. Brown, Lawrence Livermore National Lab. (United States); J. A. Chervenak, M. P. Chiao, NASA

Goddard Space Flight Ctr. (United States); R. Fujimoto, Kanazawa Univ. (Japan); Y. Ishisaki, Tokyo Metropolitan Univ. (Japan); R. L. Kelley, C. A. Kilbourne, NASA Goddard Space Flight Ctr. (United States); D. McCammon, Univ. of Wisconsin-Madison (United States); K. Mitsuda, Japan Aerospace Exploration Agency (Japan); T. Ohashi, Tokyo Metropolitan Univ. (Japan); A. E. Szymkowiak, Yale Univ. (United States); Y. Takei, Japan Aerospace Exploration Agency (Japan); M. Tashiro, Saitama Univ. (Japan); N. Yamasaki, Japan Aerospace Exploration Agency (Japan)

- 7732 3K **Operation of the x-ray telescope eROSITA** [7732-126]  
M. Fürmetz, P. Predehl, J. Eder, L. Tiedemann, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 7732 3M **Solid state slit camera (SSC) onboard MAXI** [7732-128]  
M. Kimura, H. Tsunemi, Osaka Univ. (Japan); H. Tomida, H. Katayama, Japan Aerospace Exploration Agency (Japan)
- 7732 3N **VELA: a fast DEPFET readout circuit for the NHXM Mission** [7732-129]  
L. Bombelli, C. Fiorini, A. Marone, Politecnico di Milano (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); M. Uslenghi, M. Fiorini, G. E. Villa, INAF - IASF Milano (Italy); M. Porro, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); J. Treis, Max-Planck-Institut Halbleiterlabor (Germany) and Max-Planck-Institute for Solar System Research (Germany); S. Herrmann, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut Halbleiterlabor (Germany); A. Wassatsch, Max-Planck-Institut für extraterrestrische Physik (Germany) and Max-Planck-Institut für Physik (Germany)
- 7732 3O **The high-energy detector of the New Hard X-ray Mission (NHXM): design concept** [7732-130]  
R. Bellazzini, A. Brez, M. Minuti, M. Pinchera, G. Spandre, Istituto Nazionale di Fisica Nucleare (Italy); A. Argan, Istituto Nazionale di Astrofisica (Italy); O. Catalano, INAF - IASF Palermo (Italy); E. Costa, INAF - IASF Roma (Italy); C. Fiorini, Politecnico di Milano (Italy); G. Malaguti, INAF - IASF Bologna (Italy); G. Pareschi, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); M. Uslenghi, INAF - IASF Milano (Italy)
- 7732 3P **Technologies for manufacturing of high angular resolution multilayer coated optics for the New Hard X-ray Mission: a status report II** [7732-131]  
D. Vernani, G. Borghi, R. Binda, O. Citterio, G. Grisoni, J. Kools, F. Marioni, A. Orlandi, A. Ritucci, G. Sironi, G. Valsecchi, Media Lario Technologies (Italy); S. Basso, G. Pareschi, D. Spiga, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); B. Negri, Agenzia Spaziale Italiana (Italy)

---

#### POSTER SESSION: LARGE X-RAY OBSERVATORIES

- 7732 3Q **Mounting and alignment of IXO mirror segments** [7732-132]  
K.-W. Chan, Univ. of Maryland, Baltimore County (United States) and NASA Goddard Space Flight Ctr. (United States); W. Zhang, NASA Goddard Space Flight Ctr. (United States); T. Evans, R. McClelland, M. Hong, J. Mazzarella, NASA Goddard Space Flight Ctr. (United States) and SGT, Inc. (United States); T. Saha, NASA Goddard Space Flight Ctr. (United States); L. Jalota, Univ. of Maryland, Baltimore County (United States) and NASA Goddard Space Flight Ctr. (United States); L. Olsen, NASA Goddard Space Flight Ctr. (United States); G. Byron, NASA Goddard Space Flight Ctr. (United States) and SGT, Inc. (United States)

- 7732 3T **Platinum as a release layer for thermally formed optics for IXO** [7732-137]  
S. Romaine, R. Bruni, P. Gorenstein, S. Park, P. Reid, Harvard-Smithsonian Ctr. for Astrophysics (United States); B. Ramsey, T. Kester, NASA Marshall Space Flight Ctr. (United States)
- 7732 3U **Performance of multilayer coated silicon pore optics** [7732-138]  
M. D. Ackermann, M. J. Collon, cosine Research B.V. (Netherlands); C. P. Jensen, F. E. Christensen, DTU-Space (Denmark); M. Krumrey, L. Cibik, S. Marggraf, Physikalisch-Technische Bundesanstalt (Germany); M. Bavdaz, D. Lumb, B. Shortt, European Space Research and Technology Ctr. (Netherlands)
- 7732 3V **Enhancing the International X-ray Observatory** [7732-139]  
R. Danner, D. Dailey, C. Lillie, C. Spittler, Northrop Grumman Aerospace Systems (United States)
- 7732 3W **A tower concept for the off-plane x-ray grating spectrometer for the International X-ray Observatory** [7732-140]  
S. Casement, Northrop Grumman Aerospace Systems (United States); R. L. McEntaffer, The Univ. of Iowa (United States); W. Cash, Univ. of Colorado at Boulder (United States); T. Johnson, C. Lillie, D. Dailey, Northrop Grumman Aerospace Systems (United States)
- 7732 3X **Estimate of the background for the x-ray microcalorimeter spectrometer onboard of IXO** [7732-141]  
E. Perinati, T. Mineo, INAF - IASF Palermo (Italy); L. Colasanti, S. Lotti, C. Macculi, L. Natalucci, L. Piro, INAF - IASF Roma (Italy)
- 7732 3Y **The TES-based cryogenic anticoincidence detector for IXO: first results from large area prototypes** [7732-142]  
C. Macculi, L. Colasanti, S. Lotti, L. Natalucci, L. Piro, INAF - IASF Roma (Italy); D. Bagliani, F. Brunetto, L. Ferrari, F. Gatti, Univ. degli Studi di Genova (Italy); G. Torrioli, Istituto di Fotonica e Nanotecnologie, CNR (Italy); P. Bastia, A. Bonati, Thales Alenia Space Italia S.p.A., (Italy); M. Barbera, Univ. degli Studi di Palermo (Italy); G. La Rosa, T. Mineo, E. Perinati, INAF - IASF Palermo (Italy)
- 7732 3Z **Arc-second alignment and bonding of International X-Ray Observatory mirror segments** [7732-143]  
T. C. Evans, SGT, Inc. (United States) and NASA Goddard Space Flight Ctr. (United States); K.-W. Chan, NASA Goddard Space Flight Ctr. (United States) and Univ. of Maryland, Baltimore County (United States); R. McClelland, SGT, Inc. (United States); T. Saha, NASA Goddard Space Flight Ctr. (United States)
- 7732 40 **An assessment of the problem of stray light in the optics of the International X-ray Observatory (IXO)** [7732-144]  
F. Spaan, R. Willingale, Univ. of Leicester (United Kingdom)
- 7732 41 **Improving the angular resolution of the conical Wolter-I silicon pore optics (SPO) mirror design for the International X-ray Observatory (IXO)** [7732-145]  
R. Willingale, F. H. P. Spaan, Univ. of Leicester (United Kingdom)
- 7732 42 **IXO x-ray mirrors based on slumped glass segments with reinforcing ribs: optical and mechanical design, image error budget, and optics unit integration process** [7732-146]  
M. Civitani, S. Basso, Osservatorio Astronomico di Brera (Italy); M. Bavdaz, European Space

Research and Technology Ctr. (Netherlands); O. Citterio, P. Conconi, Osservatorio Astronomico di Brera (Italy); D. Gallieni, A.D.S. International S.r.l. (Italy); M. Ghigo, Osservatorio Astronomico di Brera (Italy); B. Guldemann, European Space Research and Technology Ctr. (Netherlands); F. Martelli, BCV Progetti S.r.l. (Italy); G. Pagano, G. Pareschi, Osservatorio Astronomico di Brera (Italy); G. Parodi, BCV Progetti S.r.l. (Italy); L. Proserpio, B. Salmaso, D. Spiga, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); M. Tintori, A.D.S. International S.r.l. (Italy); E. Wille, European Space Research and Technology Ctr. (Netherlands); A. Zambra, Osservatorio Astronomico di Brera (Italy)

- 7732 43 **Advances in the active alignment system for the IXO optics** [7732-147]  
M. D. Freeman, P. B. Reid, W. Podgorski, D. Caldwell, Harvard-Smithsonian Ctr. for Astrophysics (United States)
- 7732 44 **Impacts on the IXO observing efficiency** [7732-148]  
M. Garcia, R. Smith, J. Bookbinder, D. Patnaude, Harvard-Smithsonian Ctr. for Astrophysics (United States); M. Santos-Lleo, M. Ehle, P. Rodriguez, XMM Science Operations Ctr. (Spain)
- 7732 45 **X-ray resolution tests of an off-plane reflection grating for IXO** [7732-149]  
B. R. Zeiger, A. Shipley, W. Cash, Univ. of Colorado at Boulder (United States); R. McEntaffer, The Univ. of Iowa (United States)
- 7732 46 **Predicted x-ray backgrounds for the International X-ray Observatory** [7732-150]  
R. K. Smith, Harvard-Smithsonian Ctr. for Astrophysics (United States); M. W. Bautz, Massachusetts Institute of Technology (United States); J. Bookbinder, M. R. Garcia, Harvard-Smithsonian Ctr. for Astrophysics (United States); M. Guainazzi, European Space Astronomy Ctr. (Spain); C. A. Kilbourne, NASA Goddard Space Flight Ctr. (United States)
- 7732 47 **Design and analysis of the International X-Ray Observatory mirror modules** [7732-151]  
R. S. McClelland, SGT, Inc. (United States); T. M. Carnahan, D. W. Robinson, T. T. Saha, NASA Goddard Space Flight Ctr. (United States)

---

#### POSTER SESSION: NEW X-RAY/GAMMA-RAY MISSIONS

---

- 7732 48 **AXTAR: mission design concept** [7732-152]  
P. S. Ray, U.S. Naval Research Lab. (United States); D. Chakrabarty, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); C. A. Wilson-Hodge, NASA Marshall Space Flight Ctr. (United States); B. F. Philips, U.S. Naval Research Lab. (United States); R. A. Remillard, A. M. Levine, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); K. S. Wood, M. T. Wolff, C. S. Gwon, U.S. Naval Research Lab. (United States); T. E. Strohmayer, NASA Goddard Space Flight Ctr. (United States); M. Baysinger, M. S. Briggs, P. Capizzo, L. Fabisinski, R. C. Hopkins, L. S. Hornsby, L. Johnson, C. D. Maples, J. H. Miernik, D. Thomas, NASA Marshall Space Flight Ctr. (United States); G. De Geronimo, Brookhaven National Lab. (United States)
- 7732 4A **The development of DIOS FXT (Four-Stage X-ray Telescope)** [7732-154]  
Y. Tawara, Y. Kurebayashi, S. Sugita, I. Sakurai, T. Masuda, T. Torii, K. Matsushita, Nagoya Univ. (Japan)

- 7732 4B **The x-ray camera of the EXIST/SXI telescope** [7732-155]  
M. Uslenghi, M. Fiorini, S. Mereghetti, G. E. Villa, INAF - IASF Milano (Italy); A. Bazzano, INAF - IASF Roma (Italy); P. A. Caraveo, INAF - IASF Milano (Italy); C. E. Fiorini, Politecnico di Milano (Italy) and INAF - IASF Milano (Italy); J. E. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (United States); L. Natalucci, INAF - IASF Roma (Italy); G. Pareschi, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); P. Ubertini, INAF - IASF Roma (Italy)
- 7732 4C **The x-ray mirrors for the EXIST/SXI telescope** [7732-156]  
S. Basso, G. Tagliaferri, Osservatorio Astronomico di Brera (Italy); L. Natalucci, INAF - IASF Roma (Italy); G. Parodi, BCV Progetti S.r.l. (Italy); G. E. Villa, INAF - IASF Milano (Italy); A. Bazzano, INAF - IASF Roma (Italy); P. A. Caraveo, INAF - IASF Milano (Italy); P. Conconi, R. Della Ceca, Osservatorio Astronomico di Brera (Italy); J. E. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (United States); G. Pareschi, Osservatorio Astronomico di Brera (Italy); B. D. Ramsey, NASA Marshall Space Flight Ctr. (United States); P. Ubertini, INAF - IASF Roma (Italy); M. C. A. Uslenghi, INAF - IASF Milano (Italy)
- 7732 4D **ProtoEXIST: advanced prototype CZT coded aperture telescopes for EXIST** [7732-157]  
B. Allen, J. Hong, J. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (United States); S. D. Barthelmy, R. G. Baker, N. A. Gehrels, NASA Goddard Space Flight Ctr. (United States); T. Garson, H. S. Krawczynski, Washington Univ. in St. Louis (United States); W. R. Cook, F. A. Harrison, California Institute of Technology (United States); J. A. Apple, B. D. Ramsey, NASA Marshall Space Flight Ctr. (United States)
- 7732 4E **Plans for the first balloon flight of the gamma-ray polarimeter experiment (GRAPE)** [7732-158]  
T. P. Connor, C. M. Bancroft, P. F. Bloser, J. S. Legere, M. L. McConnell, J. M. Ryan, The Univ. of New Hampshire (United States)
- 7732 4F **XCAT: the JANUS x-ray coded aperture telescope** [7732-159]  
A. D. Falcone, D. N. Burrows, The Pennsylvania State Univ. (United States); S. Barthelmy, NASA Goddard Space Flight Ctr. (United States); W. Chang, Edge Space Systems (United States); D. Fox, J. Fredley, The Pennsylvania State Univ. (United States); N. Gehrels, NASA Goddard Space Flight Ctr. (United States); M. Kelly, The Pennsylvania State Univ. (United States); R. Klar, Southwest Research Institute (United States); D. Palmer, Los Alamos National Lab. (United States); S. Persyn, Southwest Research Institute (United States); K. Reichard, The Pennsylvania State Univ. (United States); P. Roming, Southwest Research Institute (United States); E. Seifert, R. W. M. Smith, The Pennsylvania State Univ. (United States); P. Wood, Southwest Research Institute (United States); M. Zugger, The Pennsylvania State Univ. (United States)
- 7732 4G **Focal plane instrumentation for the Wide-Field X-ray Telescope** [7732-160]  
M. W. Bautz, R. F. Foster, Kavli Institute for Astrophysics and Space Research, Massachusetts Institute of Technology (United States); S. S. Murray, The Johns Hopkins Univ. (United States)
- 7732 4H **Ground calibrations of Nuclear Compton Telescope** [7732-161]  
J.-L. Chiu, National Tsing Hua Univ. (Taiwan); Z.-K. Liu, National Central Univ. (Taiwan); M. S. Bandstra, E. C. Bellm, Univ. of California, Berkeley (United States); J.-S. Liang, National Tsing Hua Univ. (Taiwan); D. Perez-Becker, A. Zoglauer, S. E. Boggs, Univ. of California, Berkeley (United States); H.-K. Chang, National Tsing Hua Univ. (Taiwan); Y.-H. Chang, National Central Univ. (Taiwan); M. A. Huang, National United Univ. (Taiwan); M. Amman, Lawrence Berkeley National Lab. (United States); S.-J. Chiang, National United Univ.

(Taiwan); W.-C. Hung, National Central Univ. (Taiwan); C.-H. Lin, Institute of Physics (Taiwan); P. N. Luke, Lawrence Berkeley National Lab. (United States); R.-S. Run, National United Univ. (Taiwan); C. B. Wunderer, DESY Photon Science (Germany)

---

#### POSTER SESSION: TECHNOLOGY FOR FUTURE OBSERVATORIES

- 7732 4I **A cryo-amplifier working in a double loop-flux locked loop scheme for SQUID readout of TES detectors** [7732-163]  
G. Torrioli, Istituto di Fotonica e Nanotecnologie, CNR (Italy); P. Bastia, Thales Alenia Space Italia S.p.A. (Italy); L. Piro, C. Macculi, L. Colasanti, INAF - IASF Roma (Italy)
- 7732 4J **The TET-1 HSRS camera structure: the second flight heritage of Cesium** [7732-164]  
M. R. Krödel, J. Habermeier, ECM Ingenieur-Unternehmen für Energie- und Umwelttechnik GmbH (Germany); I. Walter, F. Schrandt, German Aerospace Ctr. (Germany)
- 7732 4L **Concept for an innovative wide-field camera for x-ray astronomy** [7732-166]  
R. Campana, M. Feroci, INAF - IASF (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); A. Vacchi, Istituto Nazionale di Fisica Nucleare (Italy); C. Labanti, INAF - IASF Bologna (Italy); G. Zampa, Istituto Nazionale di Fisica Nucleare (Italy); E. Del Monte, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Y. Evangelista, F. Muleri, INAF - IASF Roma (Italy); L. Pacciani, A. Rubini, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); P. Soffitta, E. Costa, I. Donnarumma, F. Lazzarotto, M. Mastropietro, INAF - IASF Roma (Italy); E. Morelli, Istituto Nazionale di Fisica Nucleare (Italy) and INAF - IASF Bologna (Italy); M. Rapisarda, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); F. Fuschino, M. Marisaldi, INAF - IASF Bologna (Italy); V. Bonvicini, A. Rashevsky, N. Zampa, Istituto Nazionale di Fisica Nucleare (Italy); F. Perotti, INAF - IASF Milano (Italy); L. Amati, INAF - IASF Bologna (Italy); F. Frontera, INAF - IASF Bologna (Italy) and Univ. degli Studi di Ferrara (Italy); L. A. Antonelli, F. Fiore, G. L. Israel, F. Nicastro, Osservatorio Astronomico di Roma (Italy); M. Orlandini, INAF - IASF Bologna (Italy); G. Baldazzi, Univ. di Bologna (Italy); L. Picolli, M. Grassi, P. Malcovati, Univ. degli Studi di Pavia (Italy)
- 7732 4M **X-ray imaging and spectroscopy performance of a large area silicon drift chamber for wide-field x-ray astronomy applications** [7732-167]  
G. Zampa, A. Vacchi, Istituto Nazionale di Fisica Nucleare (Italy); M. Feroci, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); C. Labanti, INAF - IASF Bologna (Italy); V. Bonvicini, A. Rashevsky, N. Zampa, Istituto Nazionale di Fisica Nucleare (Italy); R. Campana, E. Del Monte, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); Y. Evangelista, F. Muleri, INAF - IASF Roma (Italy); L. Pacciani, A. Rubini, INAF - IASF Roma (Italy) and Istituto Nazionale di Fisica Nucleare (Italy); P. Soffitta, E. Costa, I. Donnarumma, F. Lazzarotto, M. Mastropietro, INAF - IASF Roma (Italy); E. Morelli, Istituto Nazionale di Fisica Nucleare (Italy) and INAF - IASF Bologna (Italy); M. Rapisarda, Istituto Nazionale di Fisica Nucleare (Italy) and ENEA Frascati (Italy); F. Fuschino, M. Marisaldi, INAF - IASF Bologna (Italy); G. Baldazzi, Univ. degli Studi di Bologna (Italy); L. Picolli, M. Grassi, P. Malcovati, Univ. degli Studi di Pavia (Italy)
- 7732 4N **EUV spectroscopy of high-redshift x-ray objects** [7732-168]  
M. P. Kowalski, M. T. Wolff, K. S. Wood, U.S. Naval Research Lab. (United States); T. W. Barbee, Jr., Lawrence Livermore National Lab. (United States); M. A. Barstow, Univ. of Leicester (United Kingdom)

- 7732 4O **X-ray pencil beam facility for optics characterization** [7732-169]  
M. Krumrey, L. Cibik, P. Müller, Physikalisch-Technische Bundesanstalt (Germany);  
M. Bavdaz, E. Wille, European Space Research and Technology Ctr. (Netherlands);  
M. Ackermann, M. J. Collon, cosine Research B.V. (Netherlands)
- 7732 4P **Research and development of a gamma-ray imaging spectrometer in the MeV range in Barcelona** [7732-170]  
J.-M. Alvarez, J.-L. Galvez, M. Hernanz, J. Isern, Consejo Superior de Investigaciones Científicas (Spain); M. Lozano, G. Pellegrini, Ctr. Nacional de Microelectrónica (Spain);  
M. Chmeissani, Institut de Física d'Altes Energies (Spain); E. Cabruja, M. Ullán, Ctr. Nacional de Microelectrónica (Spain)
- 7732 4Q **A brief overview of the Fusion and Astrophysics Data and Diagnostic Calibration Facility** [7732-171]  
G. V. Brown, P. Beiersdorfer, J. Clementson, J. Dunn, Lawrence Livermore National Lab. (United States); R. L. Kelley, C. A. Kilbourne, M. Leutenegger, NASA Goddard Space Flight Ctr. (United States); E. W. Magee, J. Park, Lawrence Livermore National Lab. (United States); F. S. Porter, NASA Goddard Space Flight Ctr. (United States); M. Schneider, E. Träbert, Lawrence Livermore National Lab. (United States)
- 7732 4R **Reflectivity and polarization sensitivity of a bent crystal with DLC deposition** [7732-172]  
R. Iizuka, S. Kusunoki, A. Tokuno, Y. Tsuboi, S. Takeda, S. Yamamuro, K. Misumi, Chuo Univ. (Japan); H. Akasaka, Nagaoka Univ. of Technology (Japan); N. Ohtake, M. Saito, Tokyo Institute of Technology (Japan)
- 7732 4T **Gallium nitride photocathodes for imaging photon counters** [7732-175]  
O. H. W. Siegmund, J. S. Hull, A. S. Tremsin, J. B. McPhate, Univ. of California, Berkeley (United States); A. M. Dabiran, SVT Associates, Inc. (United States)

*Author Index*

# Conference Committee

## *Symposium Chairs*

**Masanori Iye**, National Astronomical Observatory of Japan (Japan)  
**Douglas A. Simons**, Gemini Observatory (United States)

## *Symposium Cochairs*

**Mark M. Casali**, European Organisation for Astronomical Research in the Southern Hemisphere (Germany)  
**Kathryn A. Flanagan**, Space Telescope Science Institute (United States)

## *Conference Chairs*

**Monique Arnaud**, Commissariat à l'Énergie Atomique (France)  
**Stephen S. Murray**, Harvard-Smithsonian Center for Astrophysics (United States)  
**Tadayuki Takahashi**, Japan Aerospace Exploration Agency (Japan)

## *Program Committee*

**Xavier Barcons**, Instituto de Física de Cantabria CSIC-UC (Spain)  
**Martin A. Barstow**, University of Leicester (United Kingdom)  
**Marshall W. Bautz**, Massachusetts Institute of Technology (United States)  
**Angela Bazzano**, Istituto Nazionale di Astrofisica (Italy)  
**Steven E. Boggs**, University of California, Berkeley (United States)  
**Enrico Costa**, Istituto Nazionale di Astrofisica (Italy)  
**Enectali Figueroa-Feliciano**, Massachusetts Institute of Technology (United States)  
**Neil A. Gehrels**, NASA Goddard Space Flight Center (United States)  
**Paolo Giommi**, Agenzia Spaziale Italiana (Italy)  
**James C. Green**, University of Colorado at Boulder (United States)  
**Fiona A. Harrison**, California Institute of Technology (United States)  
**Jelle S. Kaastra**, SRON Netherlands Institute for Space Research (Netherlands)  
**Caroline A. Kilbourne**, NASA Goddard Space Flight Center (United States)  
**Michael P. Kowalski**, U.S. Naval Research Laboratory (United States)  
**Hideyo Kunieda**, Nagoya University (Japan)  
**D. Christopher Martin**, California Institute of Technology (United States)  
**Kirpal Nandra**, Imperial College London (United States)  
**Takaya Ohashi**, Tokyo Metropolitan University (Japan)



**Giovanni Pareschi**, Osservatorio Astronomico di Brera (Italy)  
**Arvind N. Parmar**, European Space Research and Technology Center  
(Netherlands)  
**Mikhail N. Pavlinsky**, Space Research Institute (Russian Federation)  
**Peter Predehl**, Max-Planck-Institut für extraterrestrische Physik  
(Germany)  
**Hiroshi Tsunemi**, Osaka University (Japan)  
**Peter von Ballmoos**, Centre. d'Etude Spatiale des Rayonnements  
(France)  
**Martin C. Weisskopf**, NASA Marshall Space Flight Center (United States)  
**Nicholas E. White**, NASA Goddard Space Flight Center (United States)  
**Richard Willingale**, University of Leicester (United Kingdom)

#### *Session Chairs*

- 1 UV Missions and Technologies  
**Michael P. Kowalski**, U.S. Naval Research Laboratory (United States)
- 2 X-Ray Observatories and Optics  
**Stephen S. Murray**, Harvard-Smithsonian Center for Astrophysics  
(United States)
- 3 X-Ray Polarimetry  
**Enrico Costa**, Istituto Nazionale di Astrofisica (Italy)
- 4 Gamma-Ray Observatories  
**Nicholas E. White**, NASA Goddard Space Flight Center (United States)
- 5 Astrophysical Science Drivers for New Observatories  
**Takaya Ohashi**, Tokyo Metropolitan University (Japan)
- 6 Solar Missions and Technologies  
**Angela Bazzano**, Istituto di Fisica dello Spazio Interplanetario (Italy)
- 7 Medium X-Ray Observatories I  
**Hiroshi Tsunemi**, Osaka University (Japan)
- 8 Medium X-Ray Observatories II  
**Kirpal Nandra**, Imperial College London (United Kingdom)
- 9 Medium X-Ray Observatories III  
**Fiona A. Harrison**, California Institute of Technology (United States)
- 10 Medium X-Ray Observatories IV  
**Tadayuki Takahashi**, Japan Aerospace Exploration Agency (Japan)

- 11 Large X-Ray Observatories I  
**Martin C. Weisskopf**, NASA Marshall Space Flight Center (United States)
- 12 Large X-Ray Observatories II  
**Takaya Ohashi**, Tokyo Metropolitan University (Japan)
- 13 Low-Temperature Detectors  
**Richard Willingale**, University of Leicester (United Kingdom)
- 14 New X-Ray/Gamma-Ray Missions I  
**Caroline A. Kilbourne**, NASA Goddard Space Flight Center (United States)
- 15 New X-Ray/Gamma-Ray Missions II  
**Stephen S. Murray**, Harvard-Smithsonian Center for Astrophysics (United States)
- 16 New X-Ray/Gamma-Ray Missions III  
**Tadayuki Takahashi**, Japan Aerospace Exploration Agency (Japan)