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Space Telescopes and Instrumentation 2010: Ultraviolet to Gamma Ray

Monique Arnaud
Stephen S. Murray
Tadayuki Takahashi
Editors

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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]
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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,

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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. Guldimann, 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. Mazzarella, 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,

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

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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)

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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)

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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)

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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)

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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]
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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)

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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)

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