

PROCEEDINGS OF SPIE

UV, X-Ray, and Gamma-Ray Space Instrumentation for Astronomy XIV

Oswald H. W. Siegmund
Chair/Editor

SUB Göttingen 7
216 223 13X



g1

1-3 August 2005
San Diego, California, USA

2006 B 2148

Sponsored and Published by
SPIE—The International Society for Optical Engineering

Volume 5898



The International Society
for Optical Engineering

SPIE is an international technical society dedicated to advancing engineering and scientific applications of optical, photonic, imaging, electronic, and optoelectronic technologies.

Contents

xiii *Conference Committee*

CURRENT AND FUTURE SPACE MISSIONS I

- 589801 **CASTER: a concept for a Black Hole Finder Probe based on the use of new scintillator technologies** [5898-01]
M. L. McConnell, P. F. Bloser, Univ. of New Hampshire (USA); G. Case, Louisiana State Univ. (USA) and Southern Univ. (USA); M. Cherry, Louisiana State Univ. (USA); J. Cravens, Southwest Research Institute (USA); T. G. Guzik, Louisiana State Univ. (USA); K. Hurley, Univ. of California/Berkeley (USA); R. M. Kippen, Los Alamos National Lab. (USA); J. Macri, Univ. of New Hampshire (USA); R. S. Miller, W. Paciesas, Univ. of Alabama in Huntsville (USA); J. M. Ryan, Univ. of New Hampshire (USA); B. Schaefer, Louisiana State Univ. (USA); J. G. Stacy, Louisiana State Univ. (USA) and Southern Univ. (USA); W. T. Vestrand, Los Alamos National Lab. (USA); J. P. Wefel, Louisiana State Univ. (USA)
- 589802 **First results from the balloon flight of the NCT prototype** [5898-02]
W. Coburn, S. E. Boggs, J. D. Bowen, M. E. Bandstra, Univ. of California/Berkeley (USA); M. S. Amman, Lawrence Berkeley National Lab. (USA); M. T. Burks, W. Craig, Lawrence Livermore National Lab. (USA); P. Jean, CNRS/UPS (France); R. P. Lin, Univ. of California/Berkeley (USA); P. N. Luke, Lawrence Berkeley National Lab. (USA); N. W. Madden, Lawrence Livermore National Lab. (USA); D. M. Smith, Univ. of California/Berkeley (USA); P. von Ballmoos, CNRS/UPS (France)
- 589803 **Crab: the standard x-ray candle with all (modern) x-ray satellites** [5898-03]
M. G. F. Kirsch, European Space Agency, ESAC (Spain); U. G. Briel, MPE (Germany); D. Burrows, Pennsylvania State Univ. (USA); S. Campana, Osservatorio Astronomico di Brera (Italy); G. Cusumano, IFCAI/CNR (Italy); K. Ebisawa, Astro-E2 Guest Observer Facility (USA); M. J. Freyberg, MPE (Germany); M. Guainazzi, European Space Agency, ESAC (Spain); F. Haberl, MPE (Germany); K. Jahoda, NASA Goddard Space Flight Ctr. (USA); J. Kaastra, SRON (Netherlands); P. Kretschmar, European Space Agency, ESAC (Spain); S. Larsson, Stockholm Observatory (Sweden); P. Lubinski, CAMK (Poland) and INTEGRAL Science Data Ctr. (Switzerland); K. Mori, Univ. of Miyazaki (Japan); P. Plucinsky, Harvard-Smithsonian Ctr. for Astrophysics (USA); A. M. T. Pollock, European Space Agency, ESAC (Spain); R. Rothschild, Univ. of California/San Diego (USA); S. Sembay, Leicester Univ. (United Kingdom); J. Wilms, Univ. of Warwick (United Kingdom); M. Yamamoto, Univ. of Miyazaki (Japan)
- 589804 **MEGA: a medium-energy gamma-ray astronomy mission concept** [5898-04]
P. F. Bloser, J. M. Ryan, M. L. McConnell, J. R. Macri, U. Bravar, Univ. of New Hampshire (USA); G. Kanbach, R. Andritschke, M. Ajello, Max-Planck-Institut für extraterrestrische Physik (Germany); A. Zoglauer, Univ. of California/Berkeley (USA); S. D. Hunter, NASA Goddard Space Flight Ctr. (USA); B. F. Philips, E. A. Wulf, Naval Research Lab. (USA); D. H. Hartmann, Clemson Univ. (USA); R. S. Miller, W. S. Paciesas, Univ. of Alabama in Huntsville (USA); A. D. Zych, Univ. of California/Riverside (USA); R. M. Kippen, T. Vestrand, Los Alamos National Lab. (USA); M. L. Cherry, T. G. Guzik, J. G. Stacy, J. P. Wefel, Louisiana State Univ. (USA); V. Reglero, Univ. of Valencia (Spain); G. Di Cocco, Istituto di Astrofisica Spaziale e Fisica Cosmica (Italy); J. P. Cravens, Southwest Research Institute (USA)

CURRENT AND FUTURE SPACE MISSIONS III

- 589809 **XEUS instrument package** [5898-09]
D. H. Lumb, M. Bavdaz, European Space Agency, ESTEC (Netherlands)
- 58980A **The status of the XEUS x-ray observatory mission** [5898-10]
M. Bavdaz, D. Lumb, L. Gerlach, A. Parmar, A. Peacock, ESA, ESTEC (Netherlands)
- 58980B **Hard x-ray polarimetry with EXIST** [5898-11]
T. Narita, College of the Holy Cross (USA); J. Hong, J. E. Grindlay, Harvard-Smithsonian Ctr. for Astrophysics (USA)
- 58980C **Processing challenges in the XMM-Newton slew survey** [5898-12]
R. D. Saxton, B. Altieri, XMM-SOC, ESAC (Spain); A. M. Read, Univ. of Leicester (United Kingdom); M. J. Freyberg, Max-Planck-Institut fuer Extraterrestrische Physik (Germany); M. P. Esquej, D. Bermejo, XMM-SOC, ESAC (Spain)

PHOTON COUNTING DETECTORS

- 58980E **Developments in high count rate microchannel plate detectors** [5898-15]
J. S. Lapington, Univ. of Leicester (United Kingdom)
- 58980F **Progress on development of UV photocathodes for photon-counting applications at NASA GSFC** [5898-16]
J. Stock, Swales Aerospace (USA); G. Hilton, T. Norton, Science Systems and Applications, Inc./NASA Goddard Space Flight Ctr. (USA); B. Woodgate, NASA Goddard Space Flight Ctr. (USA); S. Aslam, Muniz Engineering/NASA Goddard Space Flight Ctr. (USA); M. Ulmer, Northwestern Univ. (USA)
- 58980G **InGaN: characterization and first photo-cathode results** [5898-17]
M. P. Ulmer, B. Han, B. W. Wessels, Northwestern Univ. (USA); O. H. W. Siegmund, A. S. Tremsin, Univ. of California/Berkeley (USA)
- 58980H **Characterization of microchannel plate quantum efficiency** [5898-18]
O. Siegmund, J. Vallerger, A. Tremsin, Univ. of California/Berkeley (USA)
- 58980I **X-ray and UV detection with the Micro-Hole and Strip Plate gaseous detector** [5898-19]
J. F. C. A. Veloso, Univ. of Aveiro (Portugal) and Univ. of Coimbra (Portugal); J. M. F. dos Santos, Univ. of Coimbra (Portugal); A. Breskin, R. Chechik, The Weizmann Institute of Science (Israel)

HIGH-ENERGY RADIATION DETECTORS

- 58980J **Low-energy response of a prototype detector array for the PoGO astronomical hard x-ray polarimeter** [5898-20]
J. Kataoka, Y. Kanai, M. Arimoto, T. Ikagawa, T. Saito, M. Ueno, N. Kawai, Tokyo Institute of Technology (Japan); R. Blandford, P. Chen, T. Kamae, G. Madejski, T. Mizuno, J. Ng, H. Tajima, T. Thurston, Stanford Linear Accelerator Ctr. (USA); L. Barbier, A. Harding, J. Krizmanic, S. Hunter, J. Mitchell, R. Streitmatter, NASA Goddard Space Flight Ctr. (USA); E. Groth, R. Fernholtz, D. Marlow, Princeton Univ. (USA); Y. Saito, T. Takahashi, ISAS/JAXA (Japan); S. Gunji, H. Sakurai, Yamagata Univ. (Japan); Y. Fukazawa, Hiroshima Univ. (Japan); V. Anderson, P. Carlson, W. Klamra, M. Pearce, M. Suhonen, Royal Institute of Technology (Sweden); S. Larsson, F. Ryde, C.-I. Bjornsson, Stockholm Univ. (Sweden); G. Bogaert, Ecole Polytechnique (France); S. Kishimoto, KEK Photon Factory (Japan)
- 58980K **Wavelength-shifting fiber readout of LaCl₃ and LaBr₃ scintillators** [5898-21]
G. L. Case, Southern Univ. (USA) and Louisiana State Univ. (USA); M. L. Cherry, Louisiana State Univ. (USA); J. G. Stacy, Southern Univ. (USA) and Louisiana State Univ. (USA); C. E. Welch, Louisiana State Univ. (USA)
- 58980L **Gas micro-well track imaging detectors for gamma-ray astronomy** [5898-22]
P. F. Bloser, Univ. of New Hampshire (USA); S. D. Hunter, NASA Goddard Space Flight Ctr. (USA); J. M. Ryan, M. L. McConnell, J. R. Macri, Univ. of New Hampshire (USA)
- 58980M **Imaging of cosmic ray tracks in the PICsIT detector onboard the INTEGRAL satellite** [5898-23]
A. Segreto, INAF sez. Palermo (Italy); C. Labanti, INAF sez. Bologna (Italy); C. Ferrigno, INAF sez. Palermo (Italy); M. Marisaldi, INAF sez. Bologna (Italy)
- 58980N **Detector and telescope development for ProtoEXIST and fine beam measurements of spectral response of CZT detectors** [5898-24]
J. Hong, A. Copete, J. E. Grindlay, S. V. Vadawale, Harvard Smithsonian Ctr. for Astrophysics (USA); W. W. Craig, Lawrence Livermore National Lab. (USA); F. Harrison, W. R. Cook, California Institute of Technology (USA); N. Gehrels, Goddard Space Flight Ctr. (USA)
- 58980O **CZT detectors for a new generation of γ -ray telescopes** [5898-25]
E. M. Quadri, G. Conti, S. D'Angelo, M. Fiorini, M. Uslenghi, INAF-IASF Milano (Italy); L. Natalucci, P. Ubertini, INAF-IASF Roma (Italy)

SOLID STATE DETECTORS I

- 58980P **EPIC-pn CCD camera onboard XMM-Newton: an update of the calibration** [5898-26]
U. G. Briel, V. Burwitz, K. Dennerl, M. J. Freyberg, U. Geppert, F. Haberl, Max-Planck-Institut für extraterrestrische Physik (Germany); M. P. Esquej, M. G. F. Kirsch, ESA/ESAC (Spain)
- 58980Q **Long-term trends in radiation damage of Chandra x-ray CCDs** [5898-27]
C. E. Grant, M. W. Bautz, S. M. Kissel, B. LaMarr, G. Y. Prigozhin, Massachusetts Institute of Technology (USA)

- 58980R **Managing radiation degradation of CCDs on the Chandra X-ray Observatory II** [5898-28]
 S. L. O'Dell, NASA Marshall Space Flight Ctr. (USA); T. L. Aldcroft, Harvard-Smithsonian Ctr. for Astrophysics (USA); B. A. Bissell, Northrop Grumman Space Technology (USA); W. C. Blackwell, Jacobs Sverdrup, Sverdrup/MSFC (USA); R. A. Cameron, J. H. Chappell, J. M. DePasquale, Harvard-Smithsonian Ctr. for Astrophysics (USA); K. R. Gage, Northrop Grumman Space Technology (USA); C. E. Grant, MIT Kavli Institute for Astrophysics and Space Research (USA); C. F. Harbison, Northrop Grumman Space Technology (USA); M. Juda, Harvard-Smithsonian Ctr. for Astrophysics (USA); K. A. Marsh, E. R. Martin, Northrop Grumman Space Technology (USA); J. I. Minow, NASA Marshall Space Flight Ctr. (USA); S. S. Murray, P. P. Plucinsky, D. A. Schwartz, Harvard-Smithsonian Ctr. for Astrophysics (USA); D. P. Shropshire, Northrop Grumman Space Technology (USA); B. J. Spitzbart, S. N. Virani, Harvard-Smithsonian Ctr. for Astrophysics (USA); B. S. Williams, Northrop Grumman Space Technology (USA); S. J. Wolk, Harvard-Smithsonian Ctr. for Astrophysics (USA)
- 58980S **Health and cleanliness of the XMM-Newton science payload since launch** [5898-29]
 M. G. F. Kirsch, ESAC, European Space Agency (Spain); A. Abbey, Leicester Univ. (United Kingdom); B. Altieri, ESAC, European Space Agency (Spain); D. Baskill, Leicester Univ. (United Kingdom); K. Dennerl, Max-Planck-Institut für extraterrestrische Physik (Germany); J. van Dooren, ESA, ESTEC (Netherlands); J. Fauste, ESAC, European Space Agency (Spain); M. J. Freyberg, Max-Planck-Institut für extraterrestrische Physik (Germany); C. Gabriel, ESAC, European Space Agency (Spain); F. Haberl, Max-Planck-Institut für extraterrestrische Physik (Germany); H. Hartmann, EADS Astrium GmbH (Netherlands); G. Hartner, N. Meidinger, Max-Planck-Institut für extraterrestrische Physik (Germany); L. Metcalfe, B. Olabarrí, A. M. T. Pollock, ESAC, European Space Agency (Spain); A. M. Read, Leicester Univ. (United Kingdom); S. Rives, European Space Agency (Spain); S. Sembay, Leicester Univ. (United Kingdom); M. J. S. Smith, M. Stuhlinger, A. Talavera, ESAC, European Space Agency (Spain)

SOLID STATE DETECTORS II

- 58980U **pn-CCDs in a low-background environment: detector background of the CAST x-ray telescope** [5898-31]
 M. Kuster, Technische Univ. Darmstadt (Germany) and Max-Planck-Institut für extraterrestrische Physik (Germany); S. Cebrián, A. Rodríguez, Univ. de Zaragoza (Spain); R. Kotthaus, Max-Planck-Institut für Physik (Germany); H. Bräuninger, Max-Planck-Institut für extraterrestrische Physik (Germany); J. Franz, Univ. Freiburg (Germany); P. Friedrich, Max-Planck-Institut für extraterrestrische Physik (Germany); R. Hartmann, PNSensor GmbH (Germany); D. Kang, Univ. Freiburg (Germany); G. Lutz, Max-Planck-Institut für Physik (Germany); L. Strüder, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 58980W **First measurements with DUO/ROSITA pnCCDs** [5898-33]
 N. Meidinger, R. Andritschke, K. Dennerl, O. Hölker, G. Hasinger, Max-Planck-Institut für extraterrestrische Physik (Germany); R. Hartmann, PNSensor GmbH (Germany); G. Hartner, S. Herrmann, Max-Planck-Institut für extraterrestrische Physik (Germany); P. Holl, PNSensor GmbH (Germany); N. Kimmel, Max-Planck-Institut für extraterrestrische Physik (Germany); H. Soltau, PNSensor GmbH (Germany); L. Strüder, Max-Planck-Institut für extraterrestrische Physik (Germany)

- 58980X **Noise and spectroscopic performance of DEPMOSFET matrix devices for XEUS** [5898-34]
 J. Treis, Max-Planck-Institut für extraterrestrische Physik (Germany); P. Fischer, Univ. Mannheim (Germany); O. Hölker, S. Herrmann, Max-Planck-Institut für extraterrestrische Physik (Germany); R. Kohrs, H. Krüger, Univ. Bonn (Germany); P. Lechner, PNSensor GmbH (Germany); G. Lutz, Max-Planck-Institut für Physik (Germany); I. Peric, Univ. Mannheim (Germany); M. Porro, Politecnico di Milano (Italy); R. H. Richter, Max-Planck-Institut für Physik (Germany); L. Strüder, Max-Planck-Institut für extraterrestrische Physik (Germany); M. Trimpl, N. Wermes, Univ. Bonn (Germany); S. Wölfel, Max-Planck-Institut für extraterrestrische Physik (Germany).
- 58980Y **MOS CCDs for the wide-field imager on the XEUS spacecraft** [5898-64]
 A. D. Holland, C. Castelli, I. Hutchinson, D. R. Smith, J. Calafell, Brunel Univ. (United Kingdom); P. Pool, D. Burt, e2v technologies (United Kingdom); R. Ambrosi, Univ. of Leicester (United Kingdom); M. French, CCLRC (United Kingdom)

CURRENT AND FUTURE FLIGHT INSTRUMENTS

- 58980Z **Design and development of Tokyo Tech pico-satellite Cute-1.7** [5898-35]
 J. Kotoku, J. Kataoka, Y. Kuramoto, Y. Yatsu, T. Ikagawa, T. Saito, N. Kawai, N. Miyashita, M. Iai, K. Omagari, K. Fujiwara, Y. Funaki, H. Yabe, S. Matunaga, Tokyo Institute of Technology (Japan); T. Shima, Osaka Univ. (Japan)
- 589810 **An EUV spectrometer for mapping the heliopause and solar wind** [5898-36]
 M. Lampton, J. Edelman, Univ. of California/Berkeley (USA); T. Miller, T-Stop Design (USA); M. Gruntman, Univ. of Southern California (USA)
- 589811 **High resolution absorption spectroscopy using externally dispersed interferometry** [5898-38]
 J. Edelman, Univ. of California, Berkeley (USA); D. J. Erskine, Lawrence Livermore National Lab. (USA)
- 589812 **Three-dimensional spectroscopy with a fiber-fed NUV spectrograph** [5898-39]
 R. Grange, B. Milliard, Lab. d'Astrophysique de Marseille (France); R. McLean, C. Martin, California Institute of Technology (USA); J. M. Deharveng, Lab. d'Astrophysique de Marseille (France); D. Schiminovich, Columbia Univ. (USA)
- 589813 **Modeling contamination migration on the Chandra X-ray Observatory** [5898-40]
 S. L. O'Dell, NASA Marshall Space Flight Ctr. (USA); D. A. Swartz, Universities Space Research Association (USA); P. P. Plucinsky, M. A. Freeman, M. L. Markevitch, A. A. Vikhlinin, Harvard-Smithsonian Ctr. for Astrophysics (USA); K. C. Chen, R. J. Giordano, P. J. Knollenberg, P. A. Morris, H. Tran, Northrop Grumman Space Technology (USA); N. W. Tice, S. K. Anderson, Lockheed Martin (USA)

- 589815 **The unique observing capabilities of the SWIFT x-ray telescope [5898-42]**
 J. E. Hill, NASA/Goddard Space Flight Ctr. (USA) and Universities Space Research Association (USA); L. Angelini, NASA/Goddard Space Flight Ctr. (USA) and Johns Hopkins Univ. (USA); D. C. Morris, D. N. Burrows, The Pennsylvania State Univ. (USA); A. F. Abbey, Univ. of Leicester (United Kingdom); S. Campana, INAF Osservatorio Astronomico di Brera (Italy); M. Capalbi, ASI-ASDC (Italy); G. Cusumano, CNR Istituto di Fisica Cosmica ed Applicazioni dell Informatica (Italy); J. A. Kennea, The Pennsylvania State Univ. (USA); R. Klar, C. Mangels, Southwest Research Institute (USA); A. Moretti, INAF Osservatorio Astronomico di Brera (Italy); J.P. Osborne, Univ. of Leicester (United Kingdom); M. Perri, ASI-ASDC (Italy); J. Racusin, The Pennsylvania State Univ. (USA); G. Tagliaferri, INAF Osservatorio Astronomico di Brera (Italy); F. Tamburelli, ASI-ASDC (Italy); P. Wood, Southwest Research Institute (USA); J. A. Nousek, The Pennsylvania State Univ. (USA); A. Wells, The Pennsylvania State Univ. (USA) and Univ. of Leicester (United Kingdom)
- 589816 **Controlling the Swift XRT CCD temperature via passive cooling [5898-43]**
 J. A. Kennea, D. N. Burrows, The Pennsylvania State Univ. (USA); A. Wells, Univ. of Leicester (United Kingdom); C. Pagani, INAF-Osservatorio Astronomico di Brera (Italy); J. E. Hill, NASA/Goddard Space Flight Ctr. (USA); J. L. Racusin, D. Morris, S. Hunsberger, The Pennsylvania State Univ. (USA); A. F. Abbey, A. Beardmore, Univ. of Leicester (United Kingdom); S. Campana, INAF-Osservatorio Astronomico di Brera (Italy); M. Chester, The Pennsylvania State Univ. (USA); G. Chincarini, INAF-Osservatorio Astronomico di Brera (Italy); G. Cusumano, INAF-IASF (Italy); N. Gehrels, NASA/Goddard Space Flight Ctr. (USA); O. Godet, Univ. of Leicester (United Kingdom); T. Mineo, V. La Parola, V. Mangano, INAF-IASF (Italy); A. Moretti, INAF-Osservatorio Astronomico di Brera (Italy); J. Nousek, The Pennsylvania State Univ. (USA); J. Osborne, K. Page, Univ. of Leicester (United Kingdom); M. Perri, ASI-ASDC (Italy); G. Tagliaferri, INAF-Osservatorio Astronomico di Brera (Italy); F. Tamburelli, ASI-ASDC (Italy)
- 589817 **The in-flight spectroscopic performance of the Swift XRT CCD camera [5898-44]**
 J. P. Osborne, A. P. Beardmore, O. Godet, A. F. Abbey, M. R. Goad, K. L. Page, A. A. Wells, Univ. of Leicester (United Kingdom); L. Angelini, NASA/Goddard Space Flight Ctr. (USA); D. N. Burrows, The Pennsylvania State Univ. (USA); S. Campana, G. Chincarini, O. Citterio, INAF-Osservatorio di Brera (Italy); G. Cusumano, INAF-IASF (Italy); P. Giommi, ASI-ASDC (Italy); J. E. Hill, NASA/Goddard Space Flight Ctr. (USA) and USRA (USA); J. Kennea, Pennsylvania State Univ. (USA); V. LaParola, V. Mangano, T. Mineo, INAF-IASF (Italy); A. Moretti, INAF-Osservatorio di Brera (Italy); J. A. Nousek, C. Pagani, The Pennsylvania State Univ. (USA); M. Perri, ASI-ASDC (Italy); P. Romano, G. Tagliaferri, INAF-Osservatorio di Brera (Italy); F. Tamburelli, ASI-ASDC (Italy)

SWIFT MISSION II

- 589818 **In-flight calibration of the Swift XRT point spread function** [5898-45]
A. Moretti, S. Campana, INAF-Osservatorio Astronomico di Brera (Italy); T. Mineo, INAF-IASF (Italy); P. Romano, INAF-Osservatorio Astronomico di Brera (Italy); A. F. Abbey, Univ. of Leicester (United Kingdom); L. Angelini, NASA/Goddard Space Flight Ctr. (USA); A. Beardmore, Univ. of Leicester (United Kingdom); W. Burkert, Max-Planck-Institut für extraterrestrische Physik (Germany); D. N. Burrows, The Pennsylvania State Univ. (USA); M. Capalbi, ASI-ASDC (Italy); G. Chincarini, O. Citterio, INAF-Osservatorio Astronomico di Brera (Italy); G. Cusumano, INAF-IASF (Italy); M. J. Freyberg, Max-Planck-Institut für extraterrestrische Physik (Germany); P. Giommi, ASI-ASDC (Italy); M. R. Goad, O. Godet, Univ. of Leicester (United Kingdom); G. D. Hartner, Max-Planck-Institut für extraterrestrische Physik (Germany); J. E. Hill, J. Kennea, The Pennsylvania State Univ. (USA); V. La Parola, V. Mangano, INAF-IASF (Italy); D. Morris, J. A. Nousek, The Pennsylvania State Univ. (USA); J. Osborne, K. Page, Univ. of Leicester (United Kingdom); C. Pagani, The Pennsylvania State Univ. (USA); M. Perri, ASI-ASDC (Italy); G. Tagliaferri, INAF-Osservatorio Astronomico di Brera (Italy); F. Tamburelli, ASI-ASDC (Italy); A. Wells, Univ. of Leicester (United Kingdom)
- 589819 **In-flight calibration of the SWIFT XRT effective area** [5898-46]
P. Romano, INAF-Osservatorio Astronomico di Brera (Italy); G. Cusumano, INAF-IASF (Italy); S. Campana, INAF-Osservatorio Astronomico di Brera (Italy); V. Mangano, INAF-IASF (Italy); A. Moretti, INAF-Osservatorio Astronomico di Brera (Italy); A. F. Abbey, Univ. of Leicester (United Kingdom); L. Angelini, NASA/Goddard Space Flight Ctr. (USA); A. Beardmore, Univ. of Leicester (United Kingdom); D. N. Burrows, The Pennsylvania State Univ. (USA); M. Capalbi, ASI-ASDC (Italy); G. Chincarini, O. Citterio, INAF-Osservatorio Astronomico di Brera (Italy); P. Giommi, ASI-ASDC (Italy); M. R. Goad, O. Godet, Univ. of Leicester (United Kingdom); G. D. Hartner, Max-Planck-Institut für extraterrestrische Physik (Germany); J. E. Hill, J. Kennea, The Pennsylvania State Univ. (USA); V. LaParola, T. Mineo, INAF-IASF (Italy); D. Morris, J. A. Nousek, The Pennsylvania State Univ. (USA); J. Osborne, K. Page, Univ. of Leicester (United Kingdom); C. Pagani, INAF-Osservatorio Astronomico di Brera (Italy) and The Pennsylvania State Univ. (USA); M. Perri, ASI-ASDC (Italy); G. Tagliaferri, INAF-Osservatorio Astronomico di Brera (Italy); F. Tamburelli, ASI-ASDC (Italy); A. Wells, Univ. of Leicester (United Kingdom)
- 58981A **Absolute timing with the SWIFT X-ray telescope (XRT)** [5898-47]
G. Cusumano, V. Mangano, T. Mineo, V. La Parola, A. La Barbera, INAF-IASF (Italy); S. Campana, INAF-Osservatorio Astronomico di Brera (Italy); G. Chincarini, Univ. degli Studi di Milano Bicocca (Italy); G. Tagliaferri, A. Moretti, P. Romano, INAF-Osservatorio Astronomico di Brera (Italy); M. Capalbi, M. Perri, P. Giommi, ASI Science Data Ctr. (Italy); D. Burrows, D. Morris, J. E. Hill, J. Kennea, J. A. Nousek, Pennsylvania State Univ. (USA); C. Pagani, INAF-Osservatorio Astronomico di Brera (Italy) and Pennsylvania State Univ. (USA); L. Angelini, NASA/Goddard Space Flight Ctr. (USA); J. P. Osborne, A. F. Abbey, A. Beardmore, M. R. Goad, K. Page, A. Wells, Univ. of Leicester (United Kingdom)

SWIFT MISSION III

- 58981D **On-orbit calibration of the Swift Ultraviolet/Optical Telescope (UVOT)** [5898-51]
M. Ivanushkina, Pennsylvania State Univ. (USA); A. A. Breeveld, T. S. Poole, C. H. James, A. J. Blustin, S. R. Rosen, Mullard Space Science Lab., UCL (United Kingdom); W. Landsman, NASA Goddard Space Flight Ctr. (USA); S. D. Hunsberger, P. W. A. Roming, C. Gronwell, Pennsylvania State Univ. (USA); K. O. Mason, Mullard Space Science Lab., UCL (United Kingdom); S. Holland, NASA Goddard Space Flight Ctr. (USA); K. McGowan, M. de Pasquale, Mullard Space Science Lab., UCL (United Kingdom); M. Still, P. Boyd, NASA Goddard Space Flight Ctr. (USA)
- 58981E **On-orbit calibration of the Ultraviolet/Optical Telescope (UVOT) on Swift: Part 2** [5898-52]
A. A. Breeveld, T. S. Poole, C. H. James, A. J. Blustin, S. R. Rosen, Mullard Space Science Lab., UCL (United Kingdom); W. Landsman, P. Boyd, NASA Goddard Space Flight Ctr. (USA); C. Gronwall, The Pennsylvania State Univ. (USA); S. Holland, NASA Goddard Space Flight Ctr. (USA); S. D. Hunsberger, M. Ivanushkina, The Pennsylvania State Univ. (USA); K. O. Mason, K. McGowan, M. de Pasquale, Mullard Space Science Lab., UCL (United Kingdom); P. W. A. Roming, The Pennsylvania State Univ. (USA); M. Still, NASA Goddard Space Flight Ctr. (USA)

POSTER SESSION

- 58981F **Detector response of GSC/MAXI and its expected performance in orbit** [5898-37]
Y. Tsuchiya, A. Yoshida, K. Yamaoka, T. Arakuni, T. Miyakawa, Aoyama Gakuin Univ. (Japan); M. Matsuoka, S. Ueno, H. Tomida, T. Yokota, K. Kawasaki, N. Kuramata, H. Katayama, M. Morii, Japan Aerospace Exploration Agency (Japan); T. Mihara, M. Nakajima, N. Isobe, M. Kohama, RIKEN—The Institute of Physical and Chemical Research (Japan); H. Tsunemi, E. Miyata, Osaka Univ. (Japan); N. Kawai, J. Kataoka, Tokyo Institute of Technology (Japan); H. Negoro, Nihon Univ. (Japan)
- 58981G **Developing a Compton polarimeter to measure polarization of hard x-rays in the 50-300 keV energy range** [5898-53]
J. S. Legere, P. Bloser, J. R. Macri, M. L. McConnell, Univ. of New Hampshire (USA); T. Narita, College of the Holy Cross (USA); J. M. Ryan, Univ. of New Hampshire (USA)
- 58981H **Thermal and time dependence of radiation-induced phosphorescence in UV window materials** [5898-54]
S. Osterman, Univ. of Colorado/Boulder (USA)
- 58981I **An extreme ultraviolet optics-free spectrometer with improved spectral resolution and high signal-to-noise ratio** [5898-55]
L. V. Didkovsky, D. L. Judge, A. R. Jones, Univ. of Southern California (USA)

- 58981J **X-RED: a satellite mission concept to detect early universe gamma ray bursts** [5898-56]
M. Krumpke, Astrophysikalisches Institut Potsdam (Germany); D. Coffey, The Dublin Institute for Advanced Studies (Ireland); G. Egger, Graz Univ. of Technology (Austria); F. Vilardell, Univ. de Barcelona (Spain); K. Lefever, Instituut voor Sterrenkunde (Belgium); A. Liermann, Univ. Potsdam (Germany); A. I. D. Hoffmann, Univ. Tübingen (Germany); J. Steiper, Univ. Göttingen (Germany); M. Cherix, Observatoire de Genève (Switzerland); S. Albrecht, Leiden Observatory (Netherlands); P. Russo, Univ. of Porto (Portugal); T. Strodl, Technische Univ. Wien (Austria); R. Wahlin, Uppsala Univ. (Sweden); P. Deroo, Instituut voor Sterrenkunde (Belgium); A. Parmar, European Space Agency, ESTEC (Netherlands); N. Lund, Danish National Space Ctr. (Denmark); G. Hasinger, Max-Planck-Institut für extraterrestrische Physik (Germany)
- 58981M **Performance of the InFOCUS pixellated CdZnTe detector** [5898-59]
T. Okajima, Johns Hopkins Univ. (USA) and NASA Goddard Space Flight Ctr. (USA); J. Tueller, NASA Goddard Space Flight Ctr. (USA); H. A. Krimm, Universities Space Research Association (USA) and NASA Goddard Space Flight Ctr. (USA); S. D. Barthelmy, NASA Goddard Space Flight Ctr. (USA)
- 58981N **Temperature dependent calibration products of the SWIFT x-ray telescope** [5898-60]
D. C. Morris, D. N. Burrows, The Pennsylvania State Univ. (USA); J. E. Hill, The Pennsylvania State Univ. (USA) and NASA Goddard Space Flight Ctr. (USA); J. Kennea, J. Racusin, The Pennsylvania State Univ. (USA); P. Wood, C. Mangels, R. Klar, Southwest Research Institute (USA); L. Angelini, NASA Goddard Space Flight Ctr. (USA); F. Tamburelli, ASI-ASDC (Italy)
- 58981O **SciSim: the XMM-Newton x-ray observatory data simulator** [5898-62]
C. Gabriel, A. Ibarra Ibaibarriaga, J. Hoar, European Space Astronomy Ctr., European Space Agency (Spain)
- 58981P **Rockwell CMOS hybrid imager as a soft x-ray imaging spectrometer** [5898-63]
A. T. Kenter, R. Kraft, S. Nulsen, G. Meehan, S. S. Murray, Harvard-Smithsonian Ctr. for Astrophysics (USA)
- 58981Q **A readout ASIC for x-ray CCDs** [5898-65]
J. Calafell, A. Holland, I. Hutchinson, Brunel Univ. (United Kingdom); M. French, L. Jones, A. Fant, CCLRC (United Kingdom)

Author Index