IMPORTANT Do not use your browser’s Back button to leave this page. Doing so may result in duplicate submissions.

Thank you for your submission. Your submission has been submitted for review.

You should receive confirmation of receipt from SPIE within 48 hours. If you do not receive a confirmation within this time, please contact abstract_help@spie.org. Please do not send e-mail before this amount of time has passed.

Figures: If you have figures, tables, or other data that could not be transmitted on the form, please fax them to SPIE Technical Programs, +1 360 647 1445. Remember to clearly mark on your fax what conference you are submitting to, and include the conference code AM125.

If you have questions concerning your submission please contact SPIE Technical Programs directly at 360/676-3290, email abstract_help@spie.org.

Your submission will appear exactly as shown below. We suggest that you print this page using your browser’s Print command for future reference.

Author Submission

Conference: X-Ray and Gamma-Ray Instrumentation for Astronomy XI (AM125)

Chairs: Kathryn A. Flanagan
        Oswald H. Siegmund

Submitted: 3 February

Title: Laboratory Astrophysics using a Spare XRS Microcalorimeter

Principal Author: Frederick Scott Porter
Abstract:
The XRS instrument on Astro-E is a fully self-contained microcalorimeter x-ray instrument capable of acquiring, optimally filtering, and characterizing events for 32 independent pixels. With the launch of the Astro-E spacecraft, a full flight spare detector system has been integrated into a laboratory cryostat for use on the electron beam ion trap (EBIT) at Lawrence Livermore National Laboratory. The detector system contains a microcalorimeter array with 32 instrumented pixels heat sunk to 60 mK using an adiabatic demagnetization refrigerator. The instrument has a composite resolution of 8eV at 1 keV and 12eV at 6 keV with a minimum of 95% quantum efficiency. This will allow high spectral resolution, broadband observations of collisionally excited plasmas which are produced in the EBIT experiment. Unique to our instrument are exceptionally well characterized 1000 Angstrom thick aluminum on polyimide infrared blocking filters. The detailed transmission function including the edge fine structure of these filters has been measured in our laboratory using an erect field grating spectrometer. This will allow the instrument to perform the first broadband absolute flux measurements with the EBIT instrument. The instrument performance as well as the results of preliminary measurements will be discussed. Work performed under the auspices of the U.S. D.o.E. by Lawrence Livermore National Laboratory under contract W-7405-ENG-48 and was supported by the NASA High Energy Astrophysics Supporting Research and Technology Program.

Principal Author Affiliation:
NASA/GSFC
Code 662
NASA/GSFC
Greenbelt, MD 20771
USA
Phone: 301-286-5016
Fax: 301-286-1684
Email: porter@milkyway.gsfc.nasa.gov
Principal Author Biography:
F. Scott Porter graduated in 1987 with a B.S. in physics from Harvey Mudd College and an SciM. and PhD in 1993 from Brown University. He did post-doctoral research in cryogenic x-ray detectors at NRL and NASA/GSFC. He is currently a staff scientist in the X-ray Astrophysics branch at NASA/GSFC developing cryogenic x-ray instruments and investigating the origin of the soft x-ray background. He played a major role in the development of the XRS instrument on Astro-E.

Correspondence for Secondary Authors:
Frederick Scott Porter
Code 662
NASA/GSFC
Greenbelt, MD 20771
301-286-5016
FAX: 301-286-1684
porter@milkyway.gsfc.nasa.gov

Presentation Type:
Oral Presentation

Keywords:
X-ray detector cryogenic astrophysics