

Leisa K. Townsley

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EDUCATION

Ph.D., Physics, University of Wyoming, March 1994, Dissertation entitled “The Globular Cluster Systems of Nearby, Edge-on Spiral Galaxies”

Research included 300 nights of observing for several imaging projects at the Wyoming Infrared Observatory using visual and infrared CCD cameras, mapping the globular cluster systems of edge-on spiral galaxies, and work on an Air Force contract to perform maximum entropy image restoration and source detection on the IRAS Additional Observations of the Galactic Plane.

B.A., Physics and Mathematical Sciences, Rice University, May 1987

Research included measuring emission line widths to map turbulence in Galactic and extragalactic HII regions.

CURRENT ACTIVITIES

Senior Research Associate and member of the Chandra X-ray Observatory Advanced CCD Imaging Spectrometer (ACIS) instrument team, Department of Astronomy and Astrophysics, PSU, July 2000 - present

Principal Investigator on two Chandra/ACIS GO projects to study the Rosette Nebula and the Rosette Molecular Cloud

Principal Investigator on an XMM GO project to map the W 3 / W 4 star-forming complex

Lead Scientist on the Chandra/ACIS GTO observations of 30 Doradus and the Galactic high-mass star-forming regions M 17 and W 51

Lead Scientist on the upcoming Chandra/ACIS GTO observation of the Galactic high-mass star-forming region RCW 49

Co-Investigator on the Swift Gamma-Ray Burst Explorer (NASA MIDEX mission)

Co-Investigator on several Chandra GTO and GO projects

My activities include X-ray studies of high-mass star formation regions, leading the development of a Monte Carlo simulator for both front- and back-illuminated X-ray CCDs, leading the PSU effort to characterize and ameliorate charge transfer inefficiency in the ACIS CCDs, and refining and improving X-ray data reduction and analysis techniques.

RECENT PAST ACTIVITIES

Research Associate and member of the ACIS instrument team, Department of Astronomy and Astrophysics, PSU, July 1994 - June 2000

In addition to the ongoing activities noted above, my programmatic responsibilities as part of the ACIS team included leading the following PSU efforts: early diagnosis of ACIS radiation damage using celestial calibration data, PSF characterization (including off-axis and piled-up PSFs), developing subpixel spatial resolution algorithms, X-ray spatial mapping of the ACIS optical blocking filters (OBFs) using a synchrotron, and measuring the UV/optical rejection of the OBFs. I participated in the calibration of ACIS at the X-ray Calibration Facility, part of NASA's Marshall Space Flight Center; there I served as PSU group manager, assisted in the

development of the calibration plan, and performed quick-look analysis of ACIS data. I also contributed to the ACIS Calibration Report and participated in the Orbital Activation Phase of the Chandra mission at the Chandra X-ray Center.

Instrument Lead on the Ultraviolet/Optical Telescope (UVOT) for the Swift Gamma-ray Burst Explorer (MIDEX selected by NASA October 1999), Feb - Oct 1999

My responsibilities included leading the Phase A Concept Study for the UVOT on Swift. This involved developing schedules, budgets, and staffing plans, defining upgrades to the XMM Optical Monitor (UVOT's precursor) to accommodate Swift/UVOT science requirements, identifying a subcontractor for a major new component and negotiating the subcontract, maintaining mass and power budgets, defining interface requirements, and establishing working arrangements with Mullard Space Science Laboratory (University College, London), NASA's foreign partner on UVOT. I wrote the UVOT section for the Swift Phase A Report and participated in several reviews and presentations at NASA's Goddard Space Flight Center.

CONSULTING

NASA reviewer for the Swift X-ray Telescope Instrument Preliminary Design Review (8/2000)

NASA reviewer for the Swift Ultraviolet/Optical Telescope Instrument Preliminary Design Review (8/2000) and Critical Design Review (2/2001)

Lockheed-Martin Solar and Astrophysics Lab, Monte Carlo simulations for the Solar X-ray Imager CCDs on the GOES-N Spacecraft, 1998-99

MIT Lincoln Laboratories, Monte Carlo simulations for back-illuminated CCD detector development, 1999

SELECTED RECENT PUBLICATIONS

Townsley et al. 2002, "Simulating CCDs for the Chandra Advanced CCD Imaging Spectrometer," NIM-A 486, 716 (astro-ph/0111003)

Townsley et al. 2002, "Modeling Charge Transfer Inefficiency in the Chandra Advanced CCD Imaging Spectrometer," NIM-A 486, 751 (astro-ph/0111031)

Baganoff et al. 2001, "Rapid X-ray flaring from the direction of the supermassive black hole at the Galactic Centre," Nature 413, 45

Brandt et al. 2001, "The Chandra Deep Survey of the Hubble Deep Field North Area. IV. An Ultradeep Image of the HDF-N," AJ 122, 1

Ho et al. 2001, "Detection of Nuclear X-Ray Sources in Nearby Galaxies with Chandra," ApJ 549, L51

Plucinsky et al. 2001, "The Low-Energy Spectral Response of the ACIS CCDs on the Chandra X-ray Observatory," in *The High Energy Universe at Sharp Focus*, ASP Conf. Series (astro-ph/0111363)

Garmire et al. 2000, "Chandra X-ray Observatory Study of the Orion Nebula Cluster and BN/KL Region," AJ 120, 1426

Griffiths et al. 2000, "Hot Plasma and Black Hole Binaries in Starburst Galaxy M82," Science 290, 1325

Hornschemeier et al. 2000, "X-Ray Sources in the Hubble Deep Field Detected by Chandra," ApJ 541, 49

Roming et al. 2000, "Ultraviolet/Optical Telescope of the Swift MIDEX Mission," in *X-Ray and Gamma-Ray Instrumentation for Astronomy XI*, Proc. SPIE 4140, 76

Townsley et al. 2000, "Mitigating Charge Transfer Inefficiency in the Chandra X-ray Observatory's ACIS Instrument," ApJ 534, L139

For a complete publication list, please see the Astrophysics section of <http://xxx.lanl.gov/> and http://adsabs.harvard.edu/abstract_service.html

REFERENCES

Eric Feigelson, Professor of Astronomy and Astrophysics (*Star formation science, teaching*):
edfastro.psu.edu

Gordon Garmire, ACIS Principal Investigator and Evan Pugh Professor of Astronomy and Astrophysics (*ACIS*): ggarmireastro.psu.edu

John Nousek, Senior Scientist/Professor of Astronomy and Astrophysics and Swift Penn State Lead (*ACIS*, *Swift*): jnousekastro.psu.edu