

Center for Astrophysics and Space Astronomy
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Cynthia S. Froning

Statement I am an observational astronomer and instrumentalist. My research interests focus on the physics of accretion disks and disk outflows in compact binary systems. I am experienced in the design, implementation, testing and use of NIR, optical, and FUV cameras and spectrographs and plan to utilize these skills to develop the next generation of astronomical instrumentation.

Employment History

Research Associate
2002—present CASA, University of Colorado Boulder, CO

- Project Scientist for the Cosmic Origins Spectrograph
- PI, Conceptual design study for a High Resolution Optical Spectrograph for the Thirty Meter Telescope
- Program Director of the NICFPS instrument team (2004)

Postdoctoral Fellow
1999–2002 Space Telescope Science Institute Baltimore, MD

- Research on accretion disk physics including FUV and NIR spectroscopy of compact binary systems

Teaching Assistant
1996–1997 University of Texas Austin, TX

- TA for a graduate observing course and undergraduate astronomy classes

Research Assistant
1993–1994 University of Texas Austin, TX

- Optical photometry with IRAF of cepheids for use as standard candles

Intern
Summer 1992 University of Texas Midland, TX

- Development of a lightning protection system for remote field units

Intern
Summer 1991 General Cable Company Westminster, CO

- Repaired damaged circuit boards and updated computerized technical drawings

Education

Ph.D Astronomy
1996—1999 University of Texas Austin, TX

- Dissertation: *The Near-Infrared Properties of Compact Binary Systems*
- Member of the instrument development team for CoolSpec, a NIR spectrometer for McDonald Observatory

MA Astronomy

1993—1996 University of Texas Austin, TX

- Participated in engineering runs for the refit of Rokcam, a NIR camera at McDonald Observatory

B.S. Electrical Engineering

1989—1993 University of Texas Austin, TX

- Graduated with High Honors
- Senior research project: observations of the photo-sensitivity of blood vessels in laboratory rats as part of an investigation of cancer treatments using photosensitive dyes

Honors and Awards

- Over \$240,000 in PI research grant money awarded for data analysis and instrument development (2001 – present)
- University Co-op Endowment Fellowship (1998–1999)
- P.E.O. Scholars Award (1998)
- David Alan Benfield Memorial Scholarship in Astronomy (1998–1999)
- Fred. T. Goettings, Jr. Endowed Scholarship (1998)
- William S. Livingstone Endowment Fund Fellowship (1997–1998)
- NASA/Texas Space Grant Consortium Fellowship (1997–1998)
- David Bruton, Jr. University Fellowship (1996)
- Frank Edmonds, Jr. Memorial Fellowship (1996)
- National Science Foundation Graduate Student Fellowship (1993–1996)

Professional Memberships

- Center for Astrophysics and Space Astronomy (CASA) Fellow
- FUSE Observers Advisory Committee
- Member, American Astronomical Society

References

- Prof. Edward L. Robinson, University of Texas at Austin, elr@astro.as.utexas.edu, (512) 471-3401
- Dr. Knox S. Long, Space Telescope Science Institute, long@stsci.edu, (410) 338-4862
- Prof. James Green, University of Colorado, james.green@colorado.edu, (303) 492-7645
- Dr. William F. Welsh, San Diego State University, wfw@sciences.sdsu.edu, (619) 594-2288

**Refereed
Publications**

- Reynolds, M. T., Callanan, P. J., Robinson, E. L., & Froning, C. S., 2008, MNRAS, in press, *IR Contamination in Galactic X-Ray Novae*
- Froning, C. S., Robinson, E. L., & Bitner, M. A., 2007, ApJ, 663, 1215, *Near-Infrared Spectra of the Black Hole X-Ray Binary, A0620-00*
- Long, K. S., Brammer, G., & Froning, C. S. 2006, ApJ, 648, 541, *FUSE Spectroscopy of the White Dwarf in U Geminorum*
- Long, K. S., Froning, C. S., Knigge, C., Blair, W. P., Kallman, T. R., & Ko, Y.-K. 2005, ApJ, 630, 511, *FUV Spectroscopy of the Dwarf Novae SS Cygni and WX Hydr in Quiescence*
- Hartley, L.E., Long, K.S., Froning, C.S., & Drew, J.E. 2005, ApJ, 623, 425, *The Far Ultraviolet Spectrum of Z Cam in Quiescence and Standstill*
- Hoard, D.W., Szkody, P., Froning, C.S., Long, K.S., & Knigge, C. 2003, AJ, 126,2473, *Observations of the SW Sextantis Star DW Ursae Majoris with the Far Ultraviolet Spectroscopic Explorer*
- Godon, P., Cheng, F., Sion, E. M., Szkody, P., Long, K. S., & Froning, C. S. 2003, ApJ, submitted, *Far Ultraviolet Observations of the Dwarf Nova VW Hyi in Quiescence*
- Froning, C. S., Long, K. S., & Baptista, R. 2003, AJ, 126, 964, *Hubble Space Telescope Observations of the Nova-Like Cataclysmic Variable V348 Puppis*
- Prinja, R. K., Long, K. S., Froning, C. S., Knigge, C., Witherick, D. K., Clark, J. S., & Ringwald, F. A. 2002, MNRAS, *FUSE and HST Ultraviolet Observations of the Disc Wind of RW Sextantis*
- Long, K. S., Froning, C. S., Gänsicke, B., Knigge, C., Sion, E. M., & Szkody, P. 2003, ApJ, 591, 1172, *WZ Sge: FUSE Spectroscopy of the 2001 Outburst*
- Froning, C. S., Long, K. S., & Knigge, C. 2002, ApJ, 584, 433, *Accretion and Outflow in Interacting Binary Systems: FUSE Observations of the Novalike Cataclysmic Variable, UX Ursae Majoris*
- Froning, C. S., Long, K. S., Drew, J. E., Knigge, C., & Proga, D. 2001, ApJ, 562, 963, *FUSE Observations of U Geminorum During Outburst and Decline*
- Froning, C. S. & Robinson, E. L. 2001, AJ, 121, 2212, *Near-Infrared Light Curves of the Black Hole Binary A0620—00*
- Froning, C. S., Robinson, E. L., Welsh, W. F., & Wood, J. H. 1999, ApJ, 523, 399, *The Quiescent Accretion Disk in IP Peg at Near-Infrared Wavelengths*
- Barnes, T. G. III, Ivans, I. I., Martin, J., Froning, C. S., & Moffett, T.

J., 1999, PASP, 111, 812, *V(RI)_c Photometry of Cepheids in the Magellanic Clouds*

- Lester, D. F., Hill, G. J., Doppmann, G., & Froning, C. S. 2000, PASP, 112, 384, *CoolSpec: A Near-Infrared Long-Slit Spectrometer for McDonald Observatory*

Invited Talks

- “Near-Infrared Spectroscopy of Compact Binaries: Structure, Evolution, and Black Hole Masses”, University of Wyoming, April 2008
- “Scientific Observations with the Cosmic Origins Spectrograph”, at *Science with the New Hubble Space Telescope*, Bologna, Italy, January 2008
- “Near-Infrared Spectroscopy of Compact Binaries: Structure, Evolution, and Black Hole Masses”, University of New Mexico, October 2007
- “The Cosmic Origins Spectrograph: Capabilities and Prelaunch Performance”, at *Space Astronomy: the UV Window to the Universe*, El Escorial, Spain, May 2007
- “What FUSE Has Taught Us About the Astrophysics of Active Binaries”, at *Astrophysics in the Far Ultraviolet: Five Years of Discovery With FUSE*, Victoria, B. C., August 2004
- “Outflows in Cataclysmic Variables”, at *The Astrophysics of Cataclysmic Variables*, Strasbourg, France, July 2004
- “Studying Accretion Disks and Outflows: FUV Spectroscopy of Compact Binary Systems,” San Diego State University, May 2004

Instrumentation Papers

- Froning, et al., 2006, SPIE, 6269, 61, *Conceptual Design for a High Resolution Optical Spectrograph on the Thirty Meter Telescope: a New Concept for a Ground-Based High-Resolution Optical Spectrograph*
- Osterman, et al., 2006, SPIE, 6269, 95, *A High Resolution Optical Spectrograph for the Thirty Meter Telescope: Design and Performance*
- Hearty, F., et al. 2004, SPIE, 5492, 1623, *Near-Infrared Camera and Fabry-Perot Spectrograph (NIC-FPS)*
- Wilkinson, E., Beland, S., Froning, C. S., et al. 2003 SPIE 5164, 93, *Preliminary Calibration Results for the HST/Cosmic Origins Spectrograph*
- Lester, D. F., Hill, G. J., Doppmann, G., & Froning, C. S. 2000, PASP, 112, 384, *CoolSpec: A Near-Infrared Long-Slit Spectrometer for McDonald Observatory*