

Sonoma State University
Department of Physics and Astronomy
Rohnert Park, California 94928

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This report, the Department's twenty-first, covers the period September 1996 through August 1997. More up-to-date information may be found at www.phys-astro.sonoma.edu.

1. PERSONNEL

The faculty consisted of professors Lynn R. Cominsky, John R. Dunning, Samuel L. Greene, Duncan E. Poland (Chair), Saeid Rahimi, Gordon G. Spear (Observatory Director), and Joseph S. Tenn. Spear remained on leave to SSU's Information Technology department.

2. INSTRUCTION

A total of 441 students took Descriptive Astronomy, Introductory Observational Astronomy, Extraterrestrial Intelligence and Interstellar Travel, Frontiers in Astronomy, and Cosmology.

The Department awarded 3 B.A. degrees and 9 B.S. degrees. (All degrees are in physics.) There were 33 physics majors in Spring 1997.

3. EQUIPMENT

Optical telescopes are mounted in a sliding-roof observatory on campus. Auxiliary instrumentation for the 0.36-m Schmidt-Cassegrain telescope includes a CCD camera, an $f/10$ guide scope, a 0.2-m $f/3$ Baker-Schmidt camera, wide field cameras, a slitless prism spectrograph, a dispersion grating spectrograph with a Hg-Ne comparison source, and a 0.5 Å H α filter.

The Epoch Instruments 0.25-m $f/5$ Newtonian telescope is computer-controlled. The system points reliably to within 1-2 arcminutes on the sky. When used with the AstroLink CCD camera, the resulting images have a 20 arcminute field of view and a 2 arcsecond/pixel image scale. Reliable photometry is feasible for objects as faint as 16th magnitude.

4. RESEARCH

Cominsky continued working part-time in the Particle Astrophysics Group at the Stanford Linear Accelerator Center on projects involving X-rays and high-energy gamma-rays. She is working on science simulations for the Gamma-ray Large Area Space Telescope (GLAST) mission, recently added to NASA's Strategic Plan by the Office of Space Sciences. Student Rachel Hansen has been assisting with this work.

Cominsky has continued to study the X-ray emission from the radio pulsar-Be binary PSR 1259-63, that she originally discovered in 1993. Guest observer observations with

ASCA, OSSE and RXTE have obtained additional data on this object near apastron. In addition, she continues to collaborate with SSU graduate Mallory Roberts (now at Stanford University) on analyzing observations of the black hole candidate 4U1755-33 (RXTE), the Be-star transient binary 4U0115+63 (RXTE, BATSE), which had new outbursts in 1995, and the high-mass neutron star binary 4U1907+09 (ASCA). Using new data from RXTE, work continues with P. Hertz and K. Wood of the Naval Research Laboratory on improving the orbital timing of EXO 0748-676.

Cominsky was appointed Press Officer for the Fourth Compton Gamma Ray Observatory Symposium, held in Williamsburg, Virginia in April 1997. She organized a press conference which featured new results from CGRO, and which received considerable attention from the press, including a front page story in the New York Times, and discussion on the CBS Evening News.

5. MISCELLANEOUS

The optical observatory was used 11 times for public viewing nights, classes, and tours. There were 524 visitors.

The Department presented its "What Physicists Do" public lecture series, under Cominsky's and Tenn's direction, for the 52nd and 53rd semesters. Visiting speakers on astronomical topics were James Graham, Susana Deustua, Saul Perlmutter, and Richard Muller (U of California at Berkeley), Donald Yeomans (JPL), Kevin Krisciunas (U of Washington), Nicole Vogt (U of California, Santa Cruz), and Jeffrey Moore (NASA Ames Research Center).

Tenn continued as chair of the history committee of the Astronomical Society of the Pacific. He arranged history sessions devoted to the centennial of Yerkes Observatory and to astronomy in difficult places for the ASP annual meeting, held in Chicago in June. He continues to maintain and add to the Bruce Medalists website.

PUBLICATIONS

- Hertz, P., Wood, K. S. & Cominsky, L. R., 1997, "Eclipse Timings of the Low Mass X-ray Binary EXO 0748-676 II. Detection of an Apparent Orbital Period Change and of Orbital Period Noise," *ApJ*, 486, 1000.
- Hertz, P., Wood, K. S., & Cominsky, L. R., 1996, "Detection of an Apparent Orbital Period Change in the Low Mass X-ray Binary EXO0748-676," *BAAS*, 28, 1328.
- Roberts, M., Michelson, P., & Cominsky, L., 1997, "ASCA Observations of 4U1907+09," *BAAS*, 29, 731.

Joseph S. Tenn
Lynn R. Cominsky