

Vassar College
Department of Physics and Astronomy
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This report covers the period from September 1997 to August 1998.

1. PERSONNEL

The astronomy faculty at Vassar College is part of the Department of Physics and Astronomy and includes Frederick R. Chromey, the Director of the Observatory and newly promoted to full professor, and Debra Meloy Elmegreen, the Maria Mitchell Professor of Astronomy. James Lombardi from Cornell and Mark Somerville from MIT were hired as new assistant professors of physics, beginning in fall 1998. In May 1998, a total of 8 seniors graduated with degrees in astronomy (4), and physics (4). There were 14 juniors and 5 sophomores in the department.

2. EQUIPMENT

The Class of 1951 Observatory 32-inch telescope optics were completed in August 1998. The 20-inch telescope was used throughout the year for supernovae monitoring and observational astronomy classes, as well as public open nights. Updates can be viewed via <http://noether.vassar.edu/Astronomy.html>.

3. RESEARCH

Chromey and Elmegreen continued their research on several aspects of spiral galaxies and star formation. They observed with the Burrell-Schmidt telescope in February with student A. Mandell. They completed a deep optical imaging study of star-forming clumps in the Leo Triplet galaxy NGC 3628 with Mandell and J. McDermott, as well the interacting galaxy pair NGC 4485/4490 with undergraduates R. Wittenmyer (Williams College) and B. Knowles. Together with undergraduate student M. Santos, they made J and K-band observations of NGC 6946 with the KPNO 2.1m telescope, and determined that the central regions show bi-polar structure in addition to a mini-bar. Chromey, Elmegreen, and student B. Knowles observed with IRIM on the 4-m at KPNO in May. Together with student A. Warren, they discovered that the

nearby spiral M83 has a double circumnuclear ring as well as a mini-bar connecting the two.

Elmegreen completed her collaboration with J. Salzer (Wesleyan U.) on star-forming complexes in nearby spiral and irregular galaxies. Elmegreen also completed HST observations of the central region of NGC 2207, with collaborators M. Kaufman (Ohio State U.), C. Struck (Iowa State U.), E. Brinks (VLA), B. Elmegreen, M. Thomasson (Onsala), and M. Klaric (Midlands Technical College). The intricate central spiral structure loops may be explained by an acoustic wave origin.

Elmegreen published an undergraduate intermediate-level textbook, "Galaxies and Galactic Structure," (Prentice Hall; <http://noether.vassar.edu/Elmegreen.html>).

Undergraduate B. Bissell completed a senior thesis on K-band observations of flocculent spiral galaxies.

Many undergraduates participated in summer research programs: J. Golub was at the NRAO Green Bank site, A. Mandell was at KPNO, and S. Moringello was at the Maria Mitchell Observatory in Nantucket. In addition, the following students participated in the Keck Northeast Astronomy Consortium exchange: E. Condy was at Wellesley College, B. Knowles was at Williams College, E. McGrath was at Colgate, and D. Salter and E. Reinfeld from Wellesley were assistants at Vassar. J. Sawyer and A. Warren participated in the Vassar Undergraduate Research Summer Institute (URSI) with Chromey and Elmegreen.

4. MEETINGS

Chromey and Elmegreen traveled with 19 students in October 1997 to Colgate University for the 8th annual Keck Northeast Astronomy Consortium Research Symposium for students from the member institutions who participated in summer research. Chromey, Elmegreen, Mandell, Santos, and Condy participated in the AAS meeting in Washington.

Debra Meloy Elmegreen
 Frederick R. Chromey