

Union College
Department of Physics
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This report covers the period September 1995 to October 1996.

1. STAFF

The members of the Physics Department involved in astronomical research include the following: Ralph A. Alpher, Distinguished Research Professor, Jonathon Marr, Assistant Professor and A. G. Davis Philip, Research Professor.

Alpher acted, during this period, as administrator of Dudley Observatory. Philip continued acting as Director of the Shapley Visiting Lectureship Program and as a member of the editorial board of *Baltic Astronomy*. He also continues as a trustee of the Fund for Astrophysical Research and serves on its Theodore Dunham, Jr. Grant Program Committee. He is Secretary and Treasurer of the New York Astronomical Corporation.

2. INSTRUMENTATION

A Sparc 5 work station was purchased in the Fall of 1995 for the analysis of radio astronomy data.

An observatory containing a 16-in telescope for educational purposes will be built in 1997 - 98 as part of a new high-technology classroom under a grant from the F. W. Olin Corporation. It is planned to be ready in the Fall of 1998.

3. RESEARCH

3.1 Cosmology

Alpher has given a number of lectures on element nucleosynthesis and on the age of the universe. He continues work on a book on cosmology with Robert Herman. They spent some weeks going over the galley proof of a book by John Mather, "The Very First Light" which is aimed primarily at describing the history of the COBE satellite. Herman and Alpher gave a paper, "George Gamov and the Big Bang Model" at the George Gamov Symposium, held at George Washington University in April, 1996.

3.2 Radio Astronomy

Marr is involved in a VLBI study of gigahertz peaked spectrum sources.

3.3 Stellar Astronomy

Philip and S. Adelman (The Citadel) have been involved in a project to obtain high dispersion spectra of field horizontal-branch stars. Philip is continuing his reduction of four-color photometric CCD data at DAO and the photometric classification of horizontal-branch stars. A group of blue stars has been found located below the horizontal branch in the globular cluster M 99. The majority of these stars appear

in the central regions of the cluster. With R. Boyle (Vatican Observatory Group) a program of observations in the Strömviil system has been initiated on the Vatican Advanced Technology Telescope on Mt. Graham in Arizona. Observations are being made of open clusters to set up standard regions and of globular clusters to study the physical characteristics of stars of all spectral types. V. Straižys (ITPA, Vilnius) is cooperating in this project.

4. MEETINGS

V. Straižys (ITPA, Vilnius) and Philip edited the proceedings of the meeting, "Photometric Systems and Standard Stars" which was held at the Moletai Observatory in Lithuania in August 1995 and published in Vol 5 of *Baltic Astronomy*. Philip organized a meeting at Van Vleck Observatory, "Thirty Years of Astronomy at Van Vleck Observatory" in honor of Arthur Uggren. Approximately thirty astronomers attended the two-day meeting. The proceedings, to be edited by Philip, will appear in Volume 6 of *Baltic Astronomy*. "The Third Conference on Faint Blue Stars" was held at Union College in October of 1996. This meeting considered stars bluer than $(B-V) = 0.3$ and reports on progress made since the 1987 meeting in Tucson were made. Seventy-two astronomers from eleven countries participated in the meeting and more than 80 papers were given. The proceedings will be published by the L. Davis Press and will be edited by Philip, Liebert and Saffer.

PUBLICATIONS

- Adleman, S. J. & Philip, A. G. D. 1996 *Baltic Astronomy* 5, 117
- Adelman, S. J. & Philip, A. G. D. 1996 *MNRAS* 280, 285
- Adelman, S. J. & Philip, A. G. D. 1996 *MNRAS* 282, 953
- Adelman, S. J. & Philip, A. G. D. 1996 *MNRAS* 282, 1181
- Adelman, S. J. & Philip, A. G. D. 1996 in *Formation of the Galactic Halo*, H. Morrison & A. Sarajedini, eds., ASP Conf. Series No. 92, p. 347
- Crawford, T., Marr, J., Partidge, B. & Straus, M. A. 1996 *ApJ* 450, 225
- Philip, A. G. D. 1996 *Baltic Astronomy* 5, 425
- Philip, A. G. D., Boyle, R. & Straižys, V. 1996 *Baltic Astronomy* 5, 445
- Philip, A. G. D. & Drilling, J. S. 1996 in *Formation of the Galactic Halo*, H. Morrison & A. Sarajedini, eds., ASP Conf. Series No. 92, p. 179
- Straižys, V., Crawford, D. L. & Philip, A. G. D. 1996 *Baltic Astronomy* 5, 83
- Straižys, V. & Philip, A. G. D. 1996 *Photometric Systems and Standard Stars*, L. Davis Press & *Baltic Astronomy*

A. G. Davis Philip