moving hour circle representing the observer's celestial meridian indicates local sidereal time. There are options to add a coordinate grid and constellation names, and to trail a planet's motion. Another routine animates, at various speeds, the diurnal motion for an object at any declination as seen from any latitude. The continual diurnal motion and simultaneous variation of the sun's declination is another option, as is the migration of the NCP around the NEP in a polar projection map. There is also available an animation of the diurnal variations in the hour angles of the Sun and Moon in a planar projected horizon system. As the elongation of the moon varies continuously, lunar phases are demonstrated. Skylab2 also animates the motion of the moon relative to the Sun or Earth's shadow for every visible conjunction and opposition from a given location, thereby indicating when eclipses do or do not occur. Ephemerides tables are another option.

Session 29: Ground-Based & Undergraduate Instruments Display Session, Conference Ballroom/Hall

29.01 The National Undergraduate Research Observatory

K. DeGioia-Eastwood, M. DiVittorio (NAU), W. Osborn (CMU), S. Baird (Benedictine C.), C. Bordner (Colorado C.), R. Boyle (Dickinson C.), L. Marschall (Gettysburg C.), H. Nations, M. Seeds (F&M), T. Robertson (Ball State), W. Romanishin (U. OK), C. Schweighauser (Sangamon St.), S. Yorka (Denison U.)

The National Undergraduate Research Observatory (NURO), a consortium currently composed of ten colleges and universities, is an organization dedicated to providing research opportunities for undergraduate students and faculty using modern instrumentation at an excellent observing site. In June, 1990, NURO dedicated a recently modernized 0.8 m telescope belonging to Lowell Observatory and located near Flagstaff, Arizona. Sixty percent of the observing time on this telescope is reserved for NURO members; the remaining forty percent belongs to Lowell and Northern Arizona University. Current instrumentation consists of a PC-controlled photometric photometer equipped with UBVRI filters. Planned instrumentation includes a CCD camera and an echelle spectrograph, controlled from an adjacent warm room. NURO members have agreed to collaborate on several key research projects, including the photometry of chromospherically active binary stars, the follow-up of supernova light curves, and, with the astrobiology branch of the U.S.G.S. in Flagstaff, follow-up orbits for asteroids. Discretionary time is also available. The paper will describe the current NURO facilities, observing programs and results to date, and plans for future programs and instrument improvement. Information sheets for interested parties and institutions will be available. Funding for this project has been provided to date by the Research Corporation, Northern Arizona University, and Lowell Observatory, in addition to the member organizations.

29.02 Out of the Cold: The Automated Photometer at the Gettysburg College Observatory.

L. A. Marshall, G. B. Karshner, C. Gauthier, M. Hayden (Gett. Coll.)

The Gettysburg Automated Stellar Photometer (GASP), designed and constructed by students and faculty in the Physics Department at Gettysburg College, is a single-channel instrument designed for differential photometry of variable stars. Installed on a 40 cm, Cassegrain telescope, it is operated remotely from an adjacent warm room. We discuss the implementation of the photometer and telescope control system, associated guiding and imaging cameras, and the current software for data acquisition and on-line reduction (GASPOT). Initial observations for automatic dome tracking, using a magnetic azimuth sensor, are also presented. The telescope is currently being used for BVRI photometry of an x-ray-selected sample of binary stars. Light curves obtained by the instrument will be presented. This research was supported in part by grants from the AAS Small Research Grant Program and from the Faculty Research and Development Fund of Gettysburg College.

29.03 Swarthmore College Radio Telescope

D.L. Maraziti (Swarthmore College)

This poster outlines plans and progress in the construction of a low-cost radio telescope at a small liberal arts college. A 1.9 meter dish, previously used for satellite observations and mounted on the roof of Papalian Hall at Swarthmore College, is suitable for low resolution spectral line observations of the atomic hydrogen hyperfine transition at 1420 MHz. Modifications to the existing structure include the addition of an appropriate feed horn and a remounting to facilitate median transit observing. The receiver is heterodyne in design, mixing the RF to an IF of 72.5 MHz. A spectrum analyzer plug-in of an oscilloscope accepts the data. Further analysis will be conducted on a computer. This project will not only be educationally profitable for the author, but will enable future Swarthmore students of astronomy to obtain hands-on experience in radio astronomy.

29.04 The SARA Project: A New Beginning for a Kitt Peak 0.9-m Telescope


The Southeastern Association for Research in Astronomy (SARA), a consortium of the Florida Institute of Technology, East Tennessee State University, the University of Georgia, and Valdosta State College, has been approved by the National Science Foundation to recommission one of two 0.9-meter telescopes at Kitt Peak National Observatory. The telescope, which will be equipped with a CCD detector, photometer and polarimeter, will become the primary astronomical research facility for SARA universities while remaining accessible to the general astronomical community through a visiting observers program. As the first fully automated telescope at Kitt Peak, astronomers at each SARA institution will be able to access and program the telescope remotely. SARA's long-term science program for the telescope involves over a dozen research faculty members, who will use the instrument to study late stages of stellar evolution, binary star systems, optical counterparts to X-ray sources, and minor planets. The proposed new site for the telescope is near Mercedes Faculty Point, just west of the Warner and Swasey Observatory and south of the MIT/NASA facility. It is expected that the SARA telescope will see "first light" in the late summer of 1991.