Abstracts of Papers and Posters Presented at the 95th Spring Meeting of the AAVSO, Held in Rockford, Illinois, May 4–6, 2006

The International Variable Star Index (VSX)

Christopher L. Watson
12222 Mannix Road, San Diego, CA 92129

Abstract Now available at the AAVSO web site is a new utility: The International Variable Star Index (VSX). This program serves two distinct functions: an easy portal to access information about variable stars that is far more extensive than the *General Catalogue of Variable Stars* (GCVS), and a method of uploading variable star information. The information access includes all known cross references, basic parameters such as period and variability type, and finding charts. The upload feature permits information update on known variables (such as a new period) as well as entering new variable stars into the system. This paper will show examples of how to use VSX and describes the vetting guidelines.

The AAVSO Comparison Star Database and the Automated Chart Plotter

Vance Petriew
3 Noonan Road, Regina, Saskatchewan, S4V 0J5, Canada

Aaron Price
AAVSO, 25 Birch Street, Cambridge, MA 02138

Abstract The AAVSO is working towards an electronic charting system in order to eliminate the manual task of creating paper-based charts. The AAVSO Comparison Star Database Working Group has taken the first step by documenting all the charts into a database. This database will be queried by the Automated Chart Plotter which is currently under development. This presentation will discuss what has been accomplished to date and what future initiatives need to be explored.

SS Cygni Like You've Never Seen Her Before

Aaron Price
AAVSO, 25 Birch Street, Cambridge, MA 02138

Abstract An international group of AAVSO CCD observers watched SS Cyg nightly for many hours during most of the 2005 observing season. Over six months, they compiled over 100,000 observations of SS Cyg which resulted in the most detailed and comprehensive light curve of SS Cyg yet obtained. The goals, challenges, side benefits, and preliminary analysis results will be presented.

Period Changes of the Algol-type Eclipsing Binary LS Persei

Gary Billings
2320 Cherokee Drive NW, Calgary, Aberta, T2L0X7, Canada

Abstract Archival observations using the Harvard College Observatory Photographic Plate Collection have provided 251 magnitude estimates, yielding eighteen timings of minima for LS Persei back to 1889. Data from 1889–1935 (I series plates) and 1931–1950 (RH series plates) show different periods, which are different again from the GCVS (1960s and 1970s) and later periods. In addition, two CCD times of minima were obtained in late 2005 that confirm a period increase, suggested by 1990s visual timings, of about 0.003% since 1990. Overall, the period of LS Per has decreased by 0.025% between 1889 and 2005. The O–C data can be fit by assuming intervals of constant period separated by abrupt period changes. Alternatively, if continuous period decrease is assumed, the residuals show cyclic variations of alternating sign. Possible mechanisms for this will be discussed.

Detecting Extrasolar Planetary Transits Through Photoelectric Photometry

Matthew Beaky
Truman State University, Physics Department, 100 E. Normal, Kirksville, MO 63501

Abstract Observations of extrasolar planetary transits are crucial to determining specific information about the planet, such as mass and radius. Most observations are made using a CCD camera, but in this project we demonstrate that a solid-state photoelectric photometer can yield comparable precision. In this study, an Optec SSP-3A photoelectric photometer was used at the Truman State University Observatory in Kirksville, Missouri, to observe transits of extrasolar planets. The precision of this system is demonstrated by observing a transit of HD 209458, a well-known transiting planet with an associated stellar magnitude decrease of 0.017. Other attempts at observing planetary transits will also be reported.

Preparing for the AAVSO Deep and Wide Field Campaign

Aaron Price
AAVSO, 25 Birch Street, Cambridge, MA 02138

Abstract Prepare for the most ambitious AAVSO observing campaign ever. The AAVSO is planning a visual + PEP *JHBVR* + CCD *BVRI* observing campaign over a full degree of the late summer sky. Coordinating with the Case-Western Schmidt Telescope at Kitt Peak, we aim to cover the field from magnitudes 0–20 with intensive time resolution and high precision over the course of thirty to sixty days. In this talk we will discuss planning, coordination, observing strategies, and the scientific goals of the campaign.

Automated Extraction of Photometric Data: A Demonstration Project Using MAXIMDL on CV Images

Jerry Horne
3055 Lynview Drive, San Jose, CA 95148

Abstract The intrinsic photometric functions and scripting capability of the image processing software MAXIMDL are used to automate the extraction of photometric data from images of cataclysmic variable stars using standard AAVSO comparison stars. The resulting photometric data are then formatted for inclusion in the AAVSO variable star database. This automated technique is compared with manual data extraction methods and other photometric software.

Uncovering High School Students' Initial Understanding and Beliefs About the Nature of Science Prior to Studying Variable Stars

Pebble Richwine
University of Arizona, Institute for Astronomy, 2680 North Cherry, Tucson, AZ 85718

James Bedient
1464 Molehu Drive, Honolulu, HI 96818

Timothy F. Slater
University of Arizona, Institute for Astronomy, 2680 North Cherry, Tucson, AZ 85718

Abstract Through the Spring of 2006, high school students' initial conceptual understanding of and attitudes about the nature of science were systematically measured prior to using the curriculum packet "In the Hunt for Variable Stars." Students were about to investigate long period variable stars on Stardial images of a 26-square degree area in Aquila, under the guidance of their science teacher in a high school integrated science classroom. This study builds upon previous work and provides important baseline information to measure cognitive and affective changes resulting from an authentic scientific research experience for high school students. As such, this educational research project represents an iterative step toward developing a comprehensive picture of students' conceptual understanding of the scientific enterprise of astronomy and students' attitudes about the nature of science.

Observing a Lunar Impact

Karen Meech
Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822

Abstract In view of the highly successful NASA Deep Impact mission (July 4, 2005), the technique of controlled impacts as a remote sensing space experiment is

receiving wide interest. The SMART-1 mission is a European Space Agency mission for advanced research in technology. Launched in late September 2003, it headed for the Moon using solar-electric propulsion, arriving in lunar orbit mid-November 2004. In addition to the technology demonstration component of the mission, the SMART-1 is exploring the moon to make a comprehensive chemical inventory of elements on the surface, in part to investigate the theory that the moon formed from a violent collision. After exhausting the xenon fuel onboard the spacecraft, the gravitational perturbations by the Earth and Sun would cause a collision with the lunar surface in mid-August 2006. ESA has approved an extended mission, and beginning June 26 hydrazine thrusters will be fired to extend the mission at low altitude to allow for an impact on the near side of the moon, on the dark part near the lunar terminator under good observing conditions from Earth. The present date and time that the impact will occur are 3 September 2006, 02:00 UT. The impact mass will be 290 kg at 2 km/sec. Cratering predictions suggest that the thermal flash could be as bright as magnitude 7.4 if half of the kinetic energy of the impact were converted into heat, although if less efficient, the flash could be as faint as magnitude 16. The ESA SMART-1 Project Scientist, B. Foing, is soliciting an observing campaign at the time of impact. Because this event may be visible to the public and accessible by small telescopes, this talk will briefly describe the types of observations requested and the possible effects of the impact.

A Dome on a Home: The Story of Winchester Observatory

Walter MacDonald, II
P.O. Box 142, Winchester, Ontario, K0C 2K0, Canada

Abstract In early 2003, a robotic rooftop observatory was built on the author's home. The 6-foot diameter dome houses a 10" f/6.3 LX-200 telescope and is used almost exclusively for variable star work. Using only readily available, off-the-shelf hardware, the observatory is sufficiently automated to allow long, unattended observing runs. This presentation will discuss the construction and automation of Winchester Observatory and the adventures experienced during its first three years of operation.

Update on a New 32-inch Telescope

Mario Motta
19 Skipper Way, Gloucester, MA 01930

Abstract An update is presented on the almost completed, new, robotic 32-inch relay telescope I am building.