Abstracts of Papers and Posters Presented at the 94th Spring Meeting of the AAVSO, Held in Las Cruces, New Mexico, March 25–26, 2005

Period Change of the Eclipsing Binary V442 Cas (paper)

Gary Billings
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Abstract I have determined new times of minimum for the Algol-type eclipsing binary V442 Cassiopeiae. With these data, and other recently-published observations, the observational record spans 70 years. The O–C curve shows a period change in the 1960s.

Understanding Overcontact Binaries (paper)

Dirk Terrell
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Abstract Overcontact binaries come in a variety of configurations, with examples for both high and low mass stars. I discuss the current theoretical picture for these stars as well as new models being developed that we hope will answer the many questions we still have about them. I also discuss current observational programs that will play a key role in the testing of the new theoretical models.

Gamma-Ray Bursts and X-ray Transients Recorded With Very Low Frequency Radio Telescopes (paper)

Rodney Howe
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Abstract Gamma-ray Bursts (GRB) and X-ray transients recorded by satellite detection, such as the burst from SGR 1806-20, can be seen as a change in the signal strength from Very Low Frequency (VLF) radio transmitters monitored by stations around the globe. Prompt X-rays from GRB events and X-ray transients, like SGR 1806-20, ionize the upper atmosphere and modify the radio propagation properties of the Earth's ionosphere. This presentation describes the science of radio propagation and techniques (radios, antennas, and computer recording software) used in these detections.

2004: A Good Year for Bright Supernovae (paper)

Wayne P. Johnson
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Abstract 2004 was a good year for bright supernovae. At least two of these exploding stars could be observed using modest-sized equipment. This paper is presented to encourage more members of the AAVSO to contribute observations using visual, PEP, and CCD observations.

Portrait of a Variable Star: The Tombaugh Star Outburst Movie (paper)

David H. Levy
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Abstract Clyde Tombaugh, discoverer of Pluto and a lifelong AAVSO friend, lived in Las Cruces for the last 50 years of his life; his family still lives here. During his search for trans-Saturnian planets he discovered what he thought was a nova in outburst on March 23, 1931. Although he reported it to his superior at the time, news of the discovery remained buried in the plate archive at Lowell Observatory until I found it while doing research for his biography. A search of the plate archives at Harvard subsequently revealed nine other outbursts of what was apparently a cataclysmic variable of high galactic latitude. Now named TV Corvi, the star was first visually observed in outburst on March 23, 1990.

On February 2, 2005, I caught the star rising in the southeast and climbing rapidly in magnitude. The movie consists of several images taken throughout that night.

Building Community: International Conference on the Emerging EPO Profession (poster)

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Abstract In support of the Astronomical Society of the Pacific's (ASP) mission to increase the understanding and appreciation of astronomy, the ASP will host an international meeting September 14–16, 2005, focused on building and supporting a vibrant and connected community of individuals and groups engaged in educational and public outreach (EPO) in the disciplines of astronomy, astrobiology, space, and earth science. This conference is specially designed for individuals who are bringing the excitement of astronomy to non-astronomers. This community

of science communicators includes: NASA and NSF-funded EPO program managers, developers, evaluators, PIOs, and others who support outreach efforts by government agencies and commercial industries; Scientists working with or assigned to EPO programs or efforts; Individuals working in formal science education ~K–14 schools/colleges and minority-serving institutions as faculty or curriculum developers; Informal educators working in widely diverse settings including science centers, planetariums, museums, parks, and youth programs; Amateur astronomers involved in or interested in engaging children and adults in the excitement of astronomy; and Public outreach specialists working in observatories, visitor centers, public information offices, and in multimedia broadcasting and journalism. The conference goal is to improve the quality and increase the effective dissemination of EPO materials, products, and programs through a multi-tiered professional development conference utilizing: Visionary plenary talks; Highly interactive panel discussions; Small group workshops and clinics focused on a wide range of EPO topics including evaluation and dissemination, with separate sessions for varying experience levels; Poster and project exhibition segments; Opportunities to increase program leveraging through structured and unstructured networking sessions; and Individual program action planning sessions. There will be both separate and combined sessions for individuals working in formal, informal, public outreach, and scientific communications settings, and specific professional development sessions (more information is posted at: http://astrosociety.org/events/meeting.html).

The Small Telescope Science Program for the NASA Deep Impact Mission (paper)

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Stephanie McLaughlin
Lucy McFadden
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Abstract The Small Telescope Science Program (STSP) is a collaborative effort among technically-proficient amateur astronomers, professional and student astronomers with discretionary telescope time, and private observatories to gather valuable ground-based optical data on Comet 9P/Tempel 1, the target of Deep Impact, a NASA Discovery Mission. The main objective of this program is to provide CCD observations of Tempel 1 to supplement the professional data acquired by project collaborators at large telescopes. The science team monitors the resulting images and photometric measurements to understand how the activity of the comet changes during its orbit. When will water production turn on? How does the dust production rate change? When does jet activity begin and how long does it last? Does the comet undergo outbursts? The STSP observing campaign for 2004–2005 began in October

2004 with the comet near 19th magnitude. The comet is expected to be near 10th magnitude by the end of April and near 9th magnitude by the encounter on July 4, 2005. We encourage advanced observers to join the STSP and contribute valuable data in support of the mission. For more information about the STSP please visit http://deepimpact.umd.edu/stsp.

The MRO 2.4-m Telescope Advanced Camera/Spectrograph (poster)

Mark B. Vincent
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Abstract The Magdalena Ridge Observatory 2.4-m Telescope facility is scheduled to see first light in September, 2006. It is currently under construction atop the Magdalena Mountains in Central New Mexico, elevation 10,612 feet. The primary science drivers for this target-of-opportunity telescope are asteroid studies and the rapid response to astrophysical transient events.

The telescope's rapid response will allow it to slew to any target and acquire data within one minute of receipt of notice. The slew rates are 10 degree per second on both axes. Planned instrumentation includes an advanced dual-channel visible, infrared camera/spectrograph to cover the wavelength range from 0.45 to 2.5 microns. In imaging mode, the fields of view are about 5.0 arcminutes. In spectroscopy mode, there are planned low- to medium-resolution prisms, R from about 100 to 1000. This telescope and instrument combination will be valuable in promptly acquiring time-resolved photometry or spectroscopy of transient events such as supernovae and gamma-ray burst afterglows.

For asteroid science, this wavelength range is the one that gives the most mineralogically diagnostic information on surface compositions. This will enable us better to characterize the absorption bands and assign more accurate asteroid taxonomic classifications. Furthermore, the low resolution will require shorter exposure times, allowing for the acquisition of rotationally resolved spectra of faint asteroids.

The Magdalena Ridge Observatory is funded through the U.S. Naval Research Laboratory.

IRAF: the Power, the Pain, the Zen (paper)

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Abstract The National Optical Astronomy Observatory's (NOAO) general Image Reduction and Analysis Facility (IRAF) is one of the most powerful data reduction packages available. Used widely by professional astronomers, IRAF can reduce CCD image and spectral data, compute airmasses, heliocentric Julian dates, and world coordinate systems, provide numerous statistical packages, and much, much more. With a price tag of nothing, IRAF appears to be the obvious first choice for anyone looking for a way to take their raw images and get out clean, well-assessed data. Looks can be deceiving, however. IRAF may not cost any money, but it does cost you time. It takes time to install, time to learn, and perhaps time off the end of your life. With dense, and sometimes inaccurate manuals, a command line interface, and arcane commands, IRAF is hard to learn, and is only for the strong of heart and brave of computer. In this session, I will help you decide if IRAF is right for you. The IRAF features most relevant to AAVSO observers will be highlighted, computer needs will be discussed, and some of the tricks to becoming one with your future IRAF installation will be shown.