

PAPER SESSION ABSTRACTS

102nd Spring Meeting
 May 16-18, 2013
 Boone, NC

Date	Time	Title	Time
Friday, 05/17	9:00am - 10:30am	<p>Dan Caton</p> <p>“The Astronomer Who Came in from the Cold: The evolution of observing variable stars over three decades at Appalachian State’s Dark Sky Observatory”</p> <p>Variable star research has been my main work from my Ph.D. dissertation work through three decades of research at our Dark Sky Observatory. I will present a review of that work and the evolution of technology that took me from in situ observing with a photometer in a cold dome to remote and automatic CCD observing today. The research targets included RS CVn stars, apsidal motion eclipsing binaries, Trojan planets and exoplanets in binaries.</p>	45 min
		<p>Matthew Templeton</p> <p>“AAVSO High Energy Network: past and present”</p> <p>The AAVSO High Energy Network grew out of several initiatives in Pro-Am cooperation on gamma-ray burst localizations at the end of the 20th Century, and continues today as an informal "Section" within the AAVSO. A number of observers and groups continue to receive GRB alerts from the AAVSO's automatic service, and the amateur community remains involved in GRB followups. I'll highlight a few recent bursts with amateur followups, both within AAVSO HEN, and on their own, and make suggestions for how the amateur community could expand its pursuit of this field.</p>	20 min
	<i>Coffee Break</i>		
	11:00am - 12:00pm	<p>Jeno Solokoski</p> <p>“Working Together to Understand Novae”</p> <p>In ancient times, people occasionally looked up to find a “nova,” or new star, in the sky. With about 35 per year in our galaxy, novae are the most common major stellar explosions. Although researchers now understand what causes a white dwarf to suddenly brighten into a nova, many puzzles remain, such as why novae appear to eject orders of magnitude more material than predicted by theory, and how a uniform eruption on a spherical white dwarf can expel matter in the form of jets, clumps, and rings. Coordinated observations at radio, optical, and X-ray wavelengths can answer these questions. I will describe a new opportunity for amateur astronomers to work with professional astronomers who are using X-ray and newly upgraded radio telescopes to observe novae. Participants will have the opportunity to learn about novae, share their own expertise, and participate in the process of scientific discovery.</p>	45 min

Date	Time	Title	Time
Friday, 05/17 (continued)	11:00am - 12:00pm (continued)	Gary Walker “Kalman Filtering and Variable Stars” The Kalman Filter is used extensively in Navigation Systems to estimate the state in the presence of noise. The author explores the use of Kalman Filtering to estimate the magnitude of Variable Stars in the presence of Noise.	15 min
	<i>Lunch Break</i>		
	2:00pm – 3:00pm	Mike Simonsen “The Z CamPaign Year Four” Z Cam stars are a small subset of dwarf novae that exhibit standstills in their light curves. Most modern literature and catalogs of cataclysmic variables quote the number of known Z Cams to be on the order of 30 or so systems. After a three-year observing campaign and an exhaustive examination of the data in the AAVSO International Database we have trimmed that number by a third. One of the reasons for the misclassification of some systems is the fact that the definition of what a Z Cam is has evolved over the last 85 years to what it is today. We present the results of our investigation into 64 CVs listed at one time or another in the literature as Z Cams or possible Z Cams.	30 min
		Arne Henden “Late-time Observations of Novae” The 61cm telescopes of the AAVSO’s robotic telescope network have been used to obtain multi-wavelength photometry of many recent novae. Few novae have been previously followed more than 100 days after outburst. We are systematically imaging all novae from the past decade. This paper is an interim report, giving results for the most recent novae, and highlighting where amateurs can contribute to the project.	30 min
	<i>Coffee Break</i>		

Date	Time	Title	Time
Saturday, 05/18	2:00pm - 3:00pm	<p>John Martin “Periodic Brightness Fluctuations in the 2012 Ouburst of SN 2009ip”</p> <p>In September 2012, the supernova impostor SN 2009ip in NGC 7259 had what some have theorized was its final outburst and terminal explosion as a type II-n supernova. Our Pro-Am collaboration observed this event with high temporal cadence in V, R, and I bands. Analysis of our data reveals a periodic fluctuation on the order of weeks (with several harmonics) in the de-trended light curve after peak brightness. We have verified that this is not an instrumental effect in that it also appears in data from other unrelated instruments. In this talk will present our data and findings.</p>	20 min
		<p>Gary Walker “Color of the Night Sky”</p> <p>The author presents the results of All Night Monitoring of the Sky Brightness in BVRI filters. The measuring equipment used was Unihendron SQM's and Knightware Software. Results from 4 observatories are presented, along with implications of Twilight Flats.</p>	20 min
		<p>Donald F. Collins “Observations of an Eclipse of bright star b Persei by the Third Star in February 2013”</p> <p>b Persei (SAO 24531 = HD 26961, V ~ 4.52) is a multiple star system consisting of a close ellipsoidal binary with a 1.5 day period and a third star with a 702 day orbit. b Per is a non-thermal radio source, and the evolutionary stage of the close binary is unclear. It may be a non-eclipsing Algol or a precursor to the Algol stage. Observations with the Navy Precision Optical Interferometer showed that the third star has a nearly edge-on orbit about the close binary. Based on this orbit an eclipse of the close binary by the third star was predicted for late January, 2013. A call for observations - especially those with equipment to observe bright stars instrumentally, was made via the AAVSO. With the “back yard” convenience of a DSLR camera on a fixed tripod, DFC obtained an observation of the V magnitude of b Persei nearly every clear night in January-February 2013. The DSLR clearly detected the expected eclipse with a drop in of 0.12 V on JD 2456329 and JD 2456330 (Feb 5-6, 2013 and Feb 6-7, 2013). The eclipse was also detected by other AAVSO observers extending to JD 2456331 inclusive. The estimated duration of the eclipse (FWHM) is 2.0 ± 0.3 d. The DSLR also detects the 1.53 d orbital period of the A and B components of b Persei - a variation of 0.05 V magnitudes due to the non-eclipsing ellipsoidal star shapes. A concerted campaign should recruit many AAVSO observers to detect the next predicted eclipses in mid January 2014 (secondary) and early January 2015 (primary) assuming a 702 day cycle. Future photometric observations may aid the understanding of the evolutionary stage of the close binary.</p>	20 min

Date	Time	Title	Time
Saturday, 05/18 (continued)	2:00pm - 3:00pm (continued)	<p>Marco Ciocca “Data mining the OGLE database for eclipsing binary stars.”</p> <p>Ogle (Optical Gravitational Lensing Experiment) resulted in a searchable database of quality photometric data with open access. During Phase 2 [1] of the experiment, observations were made over a period of approximately 1000 days, resulting in over 10 billion measurements of more than 40 million objects. Data were acquired using an I-band filter with passband near the standard Cousins I filter. The database is fully searchable using MYSQL database engine, and provides time of measurements, the magnitude obtained and its error.</p> <p>A program of data mining the database was started resulting, at of this writing, in over 40 new, previously unreported, eclipsing binaries. Using the software package PerAnso (period analysis software) [2] to analyze the light curves obtained from the OGLE-II data, periods and epochs of these stars were determined. A first preliminary attempt to model the physical parameters of these binary was also started, using the Software Binary Maker 3 [3].</p> <p>1] Szymanski, M.K. (2005) "The Optical Gravitational Lensing Experiment. Internet Access to the OGLE Photometry Data Set: OGLE-II BVI maps and I-band data", Acta Astronomica 55, 43-57. [2] Vanmunster, T. 2011, Peranso period analysis software, http://www.peranso.com [3] Bradstreet, D.H., 2012, Binary Maker 3, http://www.binarymaker.com</p>	poster intro
Coffee Break			
	3:30pm - 4:30pm	<p>David Turner “Deriving Definitive Parameters for the Long Period Cepheid S Vulpeculae”</p> <p>The long-period variable S Vul is now recognized to be a classical Cepheid, following a period a century ago when its status was less well established. Its pulsation period of 68.5 days makes S Vul the longest period Cepheid recognized in the Galaxy. Possible membership in an OB association was considered briefly 30 years ago, until it was discovered to be surrounded by a sparse cluster of faint stars designated as Turner 1. Membership of S Vul in the cluster was considered unlikely in the original photometric study of Turner 1 because of contradictory implications regarding the reddening and distance of S Vul with that of cluster stars, but a recent revisiting of the data supplemented by APASS observations indicates that the cluster and Cepheid are indeed related. The implications for the implied parameters of S Vul, its reddening, distance, age, and evolutionary mass, are discussed in light of our refined knowledge of the cluster in which the Cepheid resides.</p>	20 min
		<p>Mike Simonsen “Astronomy: Hobby or Obsession?”</p> <p>A humorous look at amateur astronomers and the lengths, extent and expenses they are willing to go, to realize their celestial dreams.</p>	30 min

