Abstracts of Papers Presented at the Joint Meeting of the Society for Astronomical Sciences and the American Association of Variable Star Observers (AAVSO 103rd Spring Meeting), Held in Ontario, California, June 12–14, 2014

Recovering from the Classical-Nova Disaster

Joseph Patterson
Center for Backyard Astrophysics, 25 Claremont Avenue, Apt. 7C, New York, NY 10027; jop@astro.columbia.edu

Abstract Classical novae rise from obscurity to shine among the brightest stars in the Galaxy. The story of how they return to quiescence is still only dimly known. Vast amounts of energy are loosed upon the white dwarf and its companion, and the light curves of post-novae suggest that they take not a few years, but a few thousand years, to return to quiescence. In the meantime, the secondary may experience a lot of heating from the white dwarf's rediation—enough to overwhelm its intrinsic nuclear luminosity. I'll discuss the stellar physics behind this suggestion, and propose how it might be tested by time-series photometry in the months and years (and if possible, centuries) after outburst.

How Many R Coronae Borealis Stars Are There Really?

Geoffrey C. Clayton
Louisiana State University, Department of Physics and Astronomy, Baton Rouge, LA 70803; gclayton@fenway.phys.lsu.edu

Abstract The R Coronae Borealis (RCB) stars are rare hydrogen-deficient, carbon-rich supergiants. Two evolutionary scenarios have been suggested, a double degenerate merger of two white dwrfs (WDs), or a final helium shell flash in a planetary nebula central star. Only about 100 of the predicted 3,000 RCB stars in the Galaxy have been discovered. But the pace of discovery of new RCB stars in the Milky Way has been accelerating. We recently discovered over twenty new RCB stars by examining ASAS-e light curves. Using the recent release of the WISE All-Sky Catalog, a series of IR color-color cuts have produced a sample of candidates that may yield over 200 new RCB stars. We are trying to obtain spectra of these stars to confirm their identifications. The evidence pointing toward a WD merger or a final-flash origin for RCB stars is contradictory. Increasing the sample of known RCB stars, so that we can better study their spatial distribution in the Galaxy, can give us clues to their origins. Their number and distribution may be consistent with WD mergers. If so, this

would be an exciting result since RCB stars may be low-mass analogs of Type Ia supernovae.

Surveying for Historical Supernovae Light Echoes in the Milky Way Field

Doug L. Welch
Department of Physics and Astronomy, McMaster University, Hamilton, ON L8S 4M1, Canada; welch@physics.mcmaster.ca

Abstract Very luminous, transient events can produce detectable "light echoes"—light scattered by interstellar dust which can arrive much later than the direct light from an outburst. In the last 1,000 years, there have been half a dozen supernovae in the Milky Way which are capable of producing detectable light echoes. Light echo systems have already been found for Tycho (SN 1572) and Cas A. The three-dimensional distribution of light echoes provides one of the few menas for an astronomical source to be inspected from more than one viewpoint. Indications of the degree of asymmetry of supernovae are extremely valuable for understanding the details of the event itself. Amateurs are well-equipped to find the brighter light echoes and in this work I will provide practical guidance on how such surveys may be accomplished and the various science opportunities they provide.

A Crowd-Sourced Light Curve for SN 2014G

John C. Martin
University of Illinois at Springfield, One University Plaza, MS HSB 314, Springfield, IL 62704; jmart5@uis.edu

Abstract SN 2014G was initially classified as a Type IIn (*CBET 3787*) and was later revealed to be a Type II-L (*ATEL 5935*). In addition to having an interesting classification, it was also relatively bright, nearby (peak V ~14.3), and easy to observe with a small- to moderate-sized telescope. We mounted a cooperative effort open to both professional and non-professional observers with the goal of producing a light curve that could accurately measure variations in brightness of 0.1 magnitude with a cadence of one every two days or better. Simply collecting measured magnitudes often results in a light curve with systematic offsets between independent contributors. To minimize that effect without burdening the volunteer observers with too many additional requirements, we collected calibrated images and processed them uniformly to produce the light curve.

The Asynchronous Polar V1432 Aquilae and Its Path Back to Synchronism

David Boyd
CBA (Oxford), 5 Silver Lane, West Challow, Wantage, OX12 9TX, England; davidboyd@orion.me.uk

Joseph Patterson
Department of Astronomy, Columbia University, 550 West 120th Street, New York, NY 10027; jop@astro.columbia.edu

William Allen
CBA (Blenheim), Vintage Lane Observatory, 83 Vintage Lane, RD3, Blenheim 7273, New Zealand

Greg Bolt
CBA (Perth), 295 Camberwarra Drive, Craigie, Western Australia 6025, Australia

Michel Bonnardeau
Le Pavillon, 38930 Lalley, France

Tut Campbell
Jeannie Campbell
CBA (Arkansas), Whispering Pine Observatories, 7021 Whispering Pine Road, Harrison, AR 72601

David Cejudo
CBA (Madrid), Observatorio El Gallinero, El Berrueco, Madrid, Spain

Michael Cook
CBA (Ontario), Newcastle Observatory, 9 Laking Drive, Newcastle, ON L1B 1M5, Canada

Enrique de Miguel
CBA (Huelva), Observatoria Astronomico del CIECM, Parque Dunar Matalascañas, 21760 Almonte, Huelva, Spain

Claire Ding
Department of Astronomy, Columbia University, 550 West 120th Street, New York, NY 10027

Shawn Dvorak
CBA (Orlando), 1643 Nightfall Drive, Clermont, FL 34711

Jerrold L. Foote
CBA (Utah), 4175 E. Red Cliffs Drive, Kanab, UT 84741

Robert Fried
Deceased 2003, formerly at Braeside Observatory, Flagstaff, AZ 86002

Franz-Josef Hambsch
CBA (Mol), Oude Bleken 12, B-2400, Mol, Belgium

Jonathan Kemp
Department of Physics, Middlebury College, Middlebury, VT 05753

Thomas Krajci
CBA (New Mexico), P.O. Box 1351, Cloudcroft, NM 88317

Berto Monard
CBA (Pretoria), P.O. Box 281, Calitzdorp 6661, Western Cape, South Africa

Yemal Ogmen
CBA (Cyprus), Green Island Observatory, Gecitkale, North Cyprus

Robert Rea
CBA (Nelson), Regent Lane Observatory, 8 Regent Lane, Richmond, Nelson 7020, New Zealand

George Roberts
CBA (Tennessee), 2007 Cedarmont Drive, Franklin, TN 37067

David Skillman
CBA (Mountain Meadows), 6-G Ridge Road, Greenbelt, MD 20770

Donn Starkey
CBA (Indiana), 2507 CR 60, Auburn, IN 46706

Joseph Ulowetz
CBA (Illinois), 855 Fair Lane, Northbrook, IL 60062

Helena Uthas
Department of Astronomy, Columbia University, 550 W 120th Street, New York, NY 10027

Stan Walker
CBA (Waiharara), Wharemaru Observatory, P.O. Box 173, Awanui, 0451, New Zealand

Abstract V1432 Aquilae is the only known eclipsing asynchronous polar. In this respect it is unique and therefore merits our attention. We report the results of a 15-year campaign by the globally distributed Center for Backyard Astrophysics to observe V1432 Aql and investigate its return to synchronism. Originally knocked out of synchrony by a nova explosion before observing

records began, the magnetic white dwarf in V1432 Aql is currently rotating slower than the orbital period but is gradually catching up. The fortuitously high inclination of the binary orbit affords us the bonus of eclipses, providing a regular clock against which these temporal changes can be assessed. At the present rate, synchronism should be achieved around 2100. The continually changing trajectory of the accretion stream as it follows the magnetic field lines of the rotating white dwarf produces a complex pattern of light emission which we have measured and documented, providing comprehensive observational evidence against which physical models of the system can be tested.

The Z CamPaign: Year Five

Mike Simonsen
AAVSO Headquarters, 49 Bay State Road, Cambridge, MA 02138; mikesimonsen@aavso.org

Abstract Entering into the fifth year of the Z CamPaign, the author has developed a website summarizing our findings which will also act as a living catalogue of bona fide Z Cam stars, suspected Z Cams, and Z Cam impostors. In this paper we summarize the findings of the first four years of research, introduce the website and its contents to the public, and discuss the way forward into year five and beyond.

Modern V Photometry of the Eclipsing Triple System b Persei

Donald F. Collins
Warren Wilson College, 138 College View Drive, Swannanoa, NC 28778; dcollins@warren-wilson.edu

Jason Sanborn
Lowell Observatory, Northern Arizona University, 1400 West Mars Hill Road, Flagstaff, AZ 86001; jaisen1@lowell.edu

Robert T. Zavala
U.S. Naval Observatory Flagstaff Station, 10391 West Naval Observatory Road, Flagstaff, AZ; bzavala@nofs.navy.mil

Abstract A Complete CCD light curve in V of the bright (V ~ 4.6) ellipsoidal variable star b Persei (not β Persei) has been obtained between November 2013 and February 2014. We recover the small-amplitude 0.065-mag. variation of the ellipsoidal light curve. The period of the ellipsoidal light curve from the 2013–2014 observing season is found to be 1.5273 ± 0.0015 days, consistent with older observations. b Persei is known to be a

triple star system in which several AAVSO contributors recorded the first ever observed eclipse near February 5–6, 2013, of the inner AB stars by the third star C, which has a 702-day edge-on orbit. This eclipse was predicted based on an astrometric orbit from observations with the Navy Precision Optical Interferometer (NPOI). The NPOI provides stellar positions to milliarcsecond precision. We will present results of the orbital analysis of the triple system. The next primary eclipse of b Per is expected near January 12, 2015, and will last about two days. High time-resolution multi-color photometry will be extremely useful as we try to understand the evolutionary states of the close binary in b Per. The close binary may be a non-eclipsing Algol-like system or perhaps evolving towards a mass-transferring Algol-like stage. Time series observations from widely-distributed observers should be able to resolve the eclipse of the individual A and B components of b Persei, thus gaining hidden information about this rarely-observed system. The high brightness of this system enables precision photometry with small telescopes or finder scopes and entry-level filtered monochrome CCD cameras, which are widely available to amateurs worldwide.

A Search for Extreme Horizontal Branch Stars in the General Field Population

Douglas Walker
Department of Physics and Astronomy, University of Canterbury, Christchurch, New Zealand; douglas.walker@pg.canterbury.ac.nz

Michael Albrow
Department of Physics and Astronomy, University of Canterbury, Christchurch, New Zealand; michael.albrow@pg.canterbury.ac.nz

Abstract The study of pulsating Extreme Horizontal Branch (EHB) stars in globular clusters is a new field of stellar research. The initial discovery of three rapidly pulsating EHB stars in ω Centauri was announced at the Fourth Meeting on Hot Subdwarfs and Related Objects held in Shanghai in July 2009. A fourth sdB pulsator was discovered in the remaining photometry data soon afterwards; all were discovered in data obtained by the New Techology Telescope. In March 2013, the Space Telescope Imaging Spectrograph (STIS) was utilized on five consecutive orbits to obtain far-UV imagery of NGC 2808's core, revealing six sdB pulsators with periods 85 to 149 seconds and UV amplitudes from 2.0 to 6.8%. To date (April 2014), these ten EHB pulsators in ω Centauri and NGC 2808 form a unique class of EHB variable closely clustered around $T_{eff} \sim 50{,}000$ K.

This talk describes an initial candidate search for EHB rapidly pulsating sdB stars in the general galactic field population. The search was conducted with the 1-m McLellan telescope at the Mt. John University Observatory (MJUO) at

Lake Tekapo, New Zealand. Observations were conducted utilizing a special high speed f/8 frame-transfer camera called the Puoko-nui. The candidate set of stars was taken from the Edinburgh-Cape Blue Object Survey based on the selection criteria of a (B–V) value of –0.32 to –0.36, corresponding to the desired temperature range T_{eff} ranging from 40,000 to 64,000 K. The objective of this search was to determine whether smaller size telescopes could identify promising sets of candidate sdB pulsators which could be followed up with larger professional systems.

Undergraduate Observations of Separation and Position Angle of Double Stars WDS J05460+2119AB (ARY 6AD and ARY 6 AE) at Manzanita Observatory

Michael J. Hoffert
Concordia University, Irvine, CA; mike.hoffert@cui.edu

Eric Weise
San Diego State University, San Diego, CA; ericdweise@gmail.com

Jenna Clow
Concordia University, Irvine, CA; jenna.clow@eagles.cui.edu

Jacquelyn Hirzel
Concordia University, Irvine, CA; jacquelyn.hirzel@eagles.cui.edu

Brett Leeder
Concordia University, Irvine, CA; brett.leeder@eagles.cui.edu

Scott Molyneux
Concordia University, Irvine, CA; scott.molyneux@eagles.cui.edu

Nicholas Scutti
Concordia University, Irvine, CA; nicholas.scutti@eagles.cui.edu

Sarah Spartalis
Concordia University, Irvine, CA; sarah.spartalis@eagles.cui.edu

Corey Takuhara
Concordia University, Irvine, CA; corey.takuhara@eagles.cui.edu

Abstract Six beginning astronomy students, part of an undergraduate stellar astronomy course, one advanced undergraduate student assistant, and a professor measured the position angles and separations of Washington Double Stars (WDS) J05460+2119 (= WDS J05460+2119AB; also known as ARY 6 AD and ARY 6 AE). The measurements were made at the Manzanita

Observatory (116° 20' 42" W, 32° 44' 5" N) of the Tierra Astronomical Institute on 10 Blackwood Road in Boulevard, California (www.youtube.com/watch?v=BHVdeMGBGDU), at an elevation of 4,500 ft. A Celestron 11-inch HD Edge telescope was used to measure the position angles and separations of ARY 6 AD and ARY 6 AE. The averages of our measurements are as follows: separation AD: trial 1 124.1 arcseconds and trial 2 124.5 arcseconds; separation AE: trial 1 73.3 arcseconds and trial 2 73.8 arcseconds. The averages of positon angle for AD: trial 1 159.9 degrees and trial 2 161.3 degrees, for AE: trial 1 232.6 degrees and trial 2 233.7 degrees.

Kitt Peak Speckle Interferometry of Close Visual Binary Stars

Russell Genet
California Polytechnic State University, Cuesta College, and the University of North Dakota, 4995 Santa Margarita Lake Road, Santa Margarita, CA 93453; russmgenet@aol.com

David Rowe
PlaneWave Instruments; drowesmi@aol.com

Thomas C. Smith
Darkridge Observatory; tcsmith@darkridgeobservatory.org

Alex Teiche
California Polytechnic State University; alexteiche@gmail.com

Richard Harshaw
Brilliant Sky Observatory; rharshaw2@cox.net

Daniel Wallace
University of North Dakota; dwallace006@yahoo.com

Eric Weise
University of California; ericdweise@gmail.com

Edward Wiley
Yankee Tank Creek Observatory; edwiley@sunflower.com

Grady Boyce
Boyce Research Initiatives and Educational Foundation; grady@boyce-astro.org

Patrick Boyce
Boyce Research Initiatives and Educational Foundation; pat@boyce-astro.org

Detrick Branston
National Solar Observatory; dbranston@noao.edu

Kayla Chaney
Concordia University; kayla.chaney@eagles.cui.edu

R. Kent Clark
South Alabama University; rclark@jaguarl.usouthal.edu

Chris Estrada
California State University; prlest0112@hotmail.com

Reed Estrada
Northrop Aviation; reed.estrada@roadrunner.com

Thomas Frey
California Polytechnic State University; t.frey@sbcglobal.net

Wayne L. Green
Boulder Astronomy and Space Society; dxwayne@gmail.com

Nathalie Haurberg
Knox College; nhaurber@knox.edu

Greg Jones
Eclipse Technologies; gregj@eclipse-t.com

John Kenney
Concordia University; john.kenney@cui.edu

Sheri Loftin
Kitt Peak National Observatory; loftin@noao.edu

Izak McGieson
Knox College; izak@halcyon.nu

Rikita Patel
Concordia University; rikitaben.patel@eagles.cui.edu

Josh Plummer
University of South Alabama

John Ridgely
California Polytechnic State University; jridgely@caloly.edu

Mark Trueblood
Winer Observatory; winer.obs@gmail.com

Don Westergren
Morris Ranch Observatory; westergren@nethere.com

Paul Wren
University of North Dakota; paul.wren@gmal.com

Abstract Speckle interferometry can be used to overcome normal seeing limitations by taking many very short exposures at high magnification and analyzing the resulting speckles to obtain the position angles and separations of close binary stars. A typical speckle observation of a close binary consists of 1,000 images, each 20 milliseconds in duration. The images are stored as a multi-plane FITS cube. A portable speckle interferometry system that features an electron-multiplying CCD camera was used by the authors during two week-long observing runs on the 2.1-meter telescope at Kitt Peak National Observatory to obtain some 1,000 data cubes of close binaries selected from a dozen different research programs. Many hundreds of single reference stars were also observed and used in deconvolution to remove undesirable atmospheric and telescope optical effects. The database of well over one million images was reduced with the Speckle Interferometry Tool of PLATESOLVE3. A few sample results are provided. During the second Kitt Peak run, the McMath-Pierce 1.6- and 0.8-meter solar telescopes were evaluated for nighttime speckle interferometry, while the 0.8-meter Coude feed was used to obtain differential radial velocities of short arc binaries.

Orion Project: A Photometry and Spectroscopy Project for Small Observatories

Jeffrey L. Hopkins
Hopkins Phoenix Observatory; 7812 West Clayton Drive, Phoenix, AZ 85033; phxjeff@hposoft.com

Abstract Orion, the hunter, is one of the most famous constellations. Its declination is such that it is visible from most of the civilized world. In addition, most of the stars of Orion are very bright and interesting. Originally this project was called the Betelgeuse Campaign, but four more stars were added so the name was changed to the Orion Project. The project now includes Betelgeuse, Rigel, and the three stars of Orion's belt, Mintaka, Alnilam, and Alnitak. Both photometry and spectroscopy provide data for the project. The project has several goals, the first of which is to help beginners with photometry and spectroscopy. The second goal is to obtain the actual observations and data. Because these stars are very bright, they are seldom observed in detail. Their brightness also poses a problem for most professional observatories. It is hoped that by having observations over a long time, interesting changes can be seen that will warrant closer investigation. As a third goal it is hoped that the procedures refined in the project for spectroscopic data may help promote a similar system for the AAVSO, which has an excellent archive of photometric data, but is still lacking a means of handling spectroscopic data.

Simplified Color Photometry Using APASS Data

Nicholas Dunckel
12971 Cortez Lane, Los Altos Hills, CA 94022; ndunckel@earthlink.net

Abstract APASS, the AAVSO Photometric All-Sky Survey, now contains 47 million stars and covers 97% of the Northern and Southern hemisphere sky. Its extraordinary coverage means that there are multiple APASS-calibrated stars available for color photometry in the field of view of virtually every amateur image. This paper presents a simplified spreadsheet-based procedure that combines raw photometric data with APASS data to calibrate target objects in the same field of view. The complete photometric equations are reviewed and a simplified form is obtained for use within a limited field of view. Raw photometric data and APASS data for that image from AAVSO are combined on a spreadsheet to produce calibrated photometric measurements of target objects within the field of view. The consistency of the fit to the data is shown graphically. Error terms are tracked through the equations to provide the standard deviation of each measurement.

Impact of Observing Parameters on 17 Nights with Nova Del 2013

Wayne L. Green
7131 Oriole Lane, Longmont, CO 80503; dxwayne@gmail.com

Abstract Nova Del 2013 (V339 Del) was reported in *Astronomer's Telegram No. 5279* (PNV 20233073+2046041) on 2013 August 14. On the following day, the University of Colorado, Boulder, granted our observing request for use of the R3000-5000 spectrograph attached to their 60-cm telescope. The planning, operational approach, analysis techniques, results, issues, and operational conclusions for data taken from 15 August through 2 September are reported here.

Pushing the Envelope: CCD Flat Fielding

James Vail
2050 Belmont Avenue, Idaho Falls, ID 83404; vailja@hotmail.com

Abstract In this paper the author discusses the design aspects and considerations of flat field systems. Illumination calculations and construction techniques and materials are investigated. Several actual systems along with testing methods to determine quality are presented.

Toward Millimagnitude Photometric Calibration

Eric Dose
4021 SW 10th Avenue, #412, Topeka, KS 66604; eric@bois-darc.org

Abstract Asteroid roation, exoplanet transits, and similar measurements will increasingly call for photometric precisions better than about 10 millimagnitudes, often between nights and ideally between distant observers. The present work applies detailed spectral simulations to test popular photometric calibration practices, and to test new extensions of these practices. Using 107 synthetic spectra of stars of diverse colors, detailed atmospheric transmission spectra computed by solar-energy software, realistic spectra of popular astronomy gear, and the option of three sources of noise added at realistic millimagnitude levels, we find that certain adjustments to current calibration practices can help remove small systematic errors, especially for imperfect filters, high airmasses, and possibly passing thin cirrus clouds.

Measuring Double Stars with a Dobsonian Telescope by the Video Drift Method

Rick Wasson
24445 Epson Court, Murrieta, CA 92562; ricksshobs@verizon.net

Abstract Equipment, observing procedures, data reduction techniques, and software the author uses to measure double stars with a Dobsonian telescope by the Video Drift Method are described in detail. Challenges encountered with an Alt-Az telescope and data reduction, such as calibration, a continuously rotating field, and digital video pitfalls, along with ways to overcome them are discussed. Early measures from 2011 are presented and compared with measures of well-established sources, validating the use of a Dobsonian telescope to measure double stars by the Video Drift Method.

An Experiment in Photometric Data Reduction of Rapid Cadence Flare Search Data

Gary A. Vander Haagen
825 Stonegate Road, Ann Arbor, MI 48103; garyvh2@gmail.com

Larry E. Owings
23220 Barnes Lane, Colfax, CA 95713; lowings@foothill.net

Abstract A process was developed to utilize a singe star both for tracking and as a differential reference for high time resolution flare surveys. A data pipeline was also developed to process and merge, time stamped, high data rate target and slow data rate comparison star data for million-line files. This process reduced the data reduction time and aided in identification and analysis of photometric flare events during nightly surveys. The optical system employed a pellicle beam splitter for dual beam data collection, one path for a CCD camera for alignment, tracking, and reference and a second path for the silicon photomultiplier collection of the target data. Typical target photometric sampling rates were 100 samples/second. Comparison star flux and sky background was available over a continuous cycle ranging from every 1 to 10 seconds, depending upon the guide star's magnitude and the atmospheric stability. The data pipeline yielded target flux data with corrections for sky background, detector dark count, and differential compensation. The data pipeline was successfully tested using flare search data from YY Gem, where, 81.6 ksec (22.7 hours) of data were collected and one flare detected, resulting in a flare rate of 0.044 flare/hour, consistent with cited research.

Spectro-Polarimetry: Another New Frontier

John Menke
22500 Old Hundred Road, Barnesville, MD 20838; john@menkescientific.com

Abstract The challenge of spectroscopic research on Class B emission stars is to figure out what the emission star is doing that causes changes in the spectrum as often as every day. In many cases, it appears that stellar magnetic fields interacting with gas material from the rotating star are implicated. One effect of that should be increased polarization of the light associated with the spectral features. I have constructed a polarimeter fitted to the home-built spectrometer and 18-inch telescope to allow possible measurement of these effects. Construction, operation, and initial measurements with the spectro-polarimeter (S-P) will be described.

A Strategy for Urban Astronomical Observatory Site Preservation: The Southern Arizona Example

Eric R. Craine
STEM Laboratory, Inc., Tucson, AZ; ercraine@wrc-inc.com

Brian L. Craine
Western Research Company, Inc., Tucson, AZ; blcraine@wrc-inc.com

Patrick R. Craine
STEM Laboratory, Inc., Tucson, AZ; prcraine@gmail.com

Erin M. Craine
STEM Laboratory, Inc., Tucson, AZ; ecraine@dakotacom.net

Scott Fouts
QED Wind Power, Tucson, AZ; scott.fouts@yahoo.com

Abstract Urbanized observatories are under financial pressures for numerous and complex reasons, including concerns that increasing sky brightness will continue to erode their scientific viability. The history of urbanized observatories is one of steady decline and divestiture. We argue that light at night (LAN) impacts of urban growth are inadequately understood, that current measurement techniques are incomplete in scope, and that both limit the effectiveness of mitigation programs. We give examples of these factors for Pima County, Arizona, and propose techniques and a program that could provide focus and power to mitigation efforts, and could extend the longevity of southern Arizona observatories.

SkyGlowNet Sky Brightness Meter (iSBM) Nodes: Cerritos Observatory Station, Tucson, Arizona, and Colorado State University, Fort Collins, Colorado

Roger B. Culver
Department of Physics, Colorado State University, Fort Collins, CO 80523

Erin M. Craine
STEM Laboratory, Inc., Tucson, AZ 85745; ecraine@dakotacom.net

Heather Michalak
Department of Physics, Colorado State Universtiy, Fort Collins, CO 80523; heather.q.lsop@gmail.com

Abstract We present a summary of nearly continuous night-time sky brightness photometry from a ground static survey (GSS) conducted by STEM Laboratory, Inc., at the Global Network of Astronomical Telescopes (GNAT) Cerritos Observatory site in the Tucson Mountain foothills to the west of Tucson, Arizona. We show numerous examples of different sky conditions and their impacts on high-frequency sky brighteness measures. During that time period, a similar installation was established at Colorado State University. We also address problems and solutions related to institutional barriers to that installation.

Ground-based Efforts to Support a Space-based Experiment: the Latest LADEE Results

Brian Cudnik
Mahmudur Rahman
Department of Chemistry and Physics, Prarie View A&M University, P. O. Box 519, M.S. 2230, Prairie View, TX 77446

Abstract The much anticipated launch of NASA's Lunar Atmosphere and Dust Environment Explorer happened flawlessly last October and the satellite has been doing science (and sending a few images) since late Novermber. [The LADEE mission ended with the crash-landing of the spacecraft on the lunar far side on April 17, 2014, capping a successful 140-day mission.] We also have launched our campaign to document lunar meteroid impact flashes from the ground to supply ground truth to inform of any changes in dust concentration encountered by the spacecraft in orbit around the moon. To date I have received six reports of impact flashes or flash candidates from the group I am coordinating; other groups around the world may have more to add when all is said and done. In addition, plans are underway to prepare a program at Prairie View A&M University to involve our physics majors in lunar meteoroid, asteroid occultation, and other astronomical work through our Center for Astronomical Sciences and Technology. This facility will be a control center to not only involve physics majors, but also to include pre-service teachers and members of the outside community to promote pro-am collaborations.

Got Scope? The Benefits of Visual Telescopic Observing in the College Classroom

Kristine Larsen
Central Connecticut State University, 1615 Stanley Street, New Britain, CT 06050; Larsen@ccsu.edu

Abstract The author discusses pedagogical successes achieved in a course based on visual telescopic observation for college students in all majors.