

# Charlottesville Astronomical Society

"Promoting the Enjoyment of Observing and Learning for All"

## **Astro-OP Educator-NEWS**

2013:10:25



### **CAS Astro-OP E-News ...created especially for Educators!**

Dear Educator,

Over the course of the past two months the CAS Astronomy Outreach Program (Astro-OP) has reached out to approximately 100 public and private schools in 10 counties to promote Astronomy and the joys of observing and learning for “kids of all ages”. As one might suspect, we all fall into that “kids of all ages” category – myself included for we never stop learning. I’ve learned how satisfying it is to meet with highly motivated educators seeking to share the joys of knowledge with the next generation of future leaders in all walks of life, from the arts, education, engineering, and entertainment to medicine, music, politics, psychology, science, sociology, and theology. My satisfaction derives from both envy and admiration, for I envy your opportunity as an educator to work with these young people and I admire the magnificent job you somehow manage to accomplish with continuously diminishing resources. CAS, with its Astro-OP effort, attempts to

ease that burden by supplementing your resources with those of us whom are now positioned to “give back” what we’ve received from prior generations of educators. In this scenario, Education serves as society’s linchpin without which the wheels stop turning. It’s as if the continuing viability of our world directly depends on the future harvesting of knowledge that you, as Educators presently sow in each new crop of minds.

If the CAS Astro-OP effort with your help encourages one young person to pursue and achieve greater ambitions, it will make a difference. And, if it encourages ten young people, tomorrow it will make an even bigger difference. Over time, I foresee the fruits of our mutual initiative growing and making significant differences in the lives of young people. The experiences of our journey along the way will be, by far, more stimulating and gratifying than arrival at the destination – so enjoy the ride.

We recently have had conversations with Shanil Virani, Director of the John C. Well Planetarium at James Madison University to discuss how we may better collaborate and facilitate use of his astronomy resources for CAS Astro-OP Educators – for the details, see the article on page 5.

If you are interested in learning about CAS Astro-OP, contact us:

<http://cvilleastro.com/>

or email:

[fred.repich@gmail.com](mailto:fred.repich@gmail.com)

Your support is essential to the success of the CAS’ mission as stated in our masthead, “Promoting the enjoyment of observing and learning for all”.

*Best Regards,*

*Fritz (Fred) Repich,  
CAS Astro-OP Coordinator,  
E-News Editor*

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## Contents

In This Issue.....	2
Calendar.....	2
Monthly Meetings.....	2
Quality & Effectiveness....	4
Build A Telescope .....	4
JMU's Planetarium .....	5
Astronomy Links .....	5
Astronomy Resources ... ..	6

## In this Issue

This edition of E-News provides you with the CAS Calendar – a listing of the coming month's astronomical activities, events, and functions. Please notice the date change to November 24, 2013 for the Parent-Student build a telescope project. Although all slots had been filled, there may be cancellations due to the change in dates. Details are provided in the Telescope Kit Poster.

Each month, on the first Wednesday evening from 6:45 PM to approximately 8:30 PM, CAS conducts its monthly meeting for members and guests at the McCormick Observatory on the UVA campus in Charlottesville. Come check us out, and if you are a science educator your membership is free. Each month we have a guest speaker – in November, it's Tom Field, who will present a video lecture from Seattle, WA on Real Time Spectroscopy. A colorful spectrum can right-

ly be called a “fingerprint of a star.”

## Calendar

**Thursday, October 24, 2014 and Thursday, November 21, 2013 John C. Wells Planetarium at JMU, Harrisonburg, VA Star Parties (rain dates are 10/26/13 and 11/23/13, respectively)**

Contact: Shanil Virani, Director, John C. Wells Planetarium, Department of Physics & Astronomy MSC 4502, James Madison University, Harrisonburg, VA 22807

<http://www.jmu.edu/planetarium>

• **Friday, October 25, 2013 – UVA Fan Mt. Open House (Tickets Required)**

Ticket requests are only accepted at certain times of the year. Requests must be accompanied by a self addressed, stamped envelope or tickets cannot be sent. You must also list the number of tickets needed (up to six (6)). Individual groups larger than six (6) cannot be accommodated.

**Friends of the Leander McCormick Observatory**

do not need tickets for Fan Mountain Public Nights, simply bring your membership card with you.

**When to Request Tickets:**

• For the **April Fan Mt Public Night**, send requests starting March 1<sup>st</sup> (the supply of tickets is usually exhausted by the 3<sup>rd</sup> week of March).

• For the **October Fan Mt Public Night**, send requests starting September 1<sup>st</sup> (the supply of tickets is usually exhausted by the 3<sup>rd</sup> week of September).

Tickets will be mailed out 2-3 weeks prior to the public night, on a first come, first served basis until the supply is exhausted. Again, only requests with a self-address stamped envelope and a number (up to 6) of tickets requested can be accommodated. Send a self-addressed, stamped envelope, along with the number of tickets requested (up to 6), to:

Fan Mountain Public Night  
P.O. Box 400325  
Charlottesville, VA 22904-04325

• **Monday, October 28, 2013 -- Fluvanna Middle School Astronomy Club Organizational Meeting**

• **Wed, Nov 6, 2013, 6:45 PM – Charlottesville Astronomical Society, Monthly Meeting – McCormick Observatory**

• **Fri, Nov 15, 2013, 6:00 – 8:00 PM - Greene County Primary (K-2) and Nathaniel Greene Elementary School Science Fair.** CAS Star Party and Guest Speaker Edward Preston.

• **Wed, Nov 20, 2013, 2:45-4:00 PM - Locust Grove Middle School Astronomy Club.** CAS Guest Speaker Steve Layman.

• **Fri, Nov 29, 2013, 7:00 – 9:00 PM Heidi's Night – Educational Activities and Observing.**

• **Fri, Dec 6, 2013, 7:00 – 9:00 PM – CAS Ivy Creek, Star Party 7:00 – 9:00 pm**

## **Monthly Meetings**

### **Wed, Nov 6, 2013**



The speaker this month, Tom Field, will present a video lecture from Seattle, WA on Real Time Spectroscopy. A colorful spectrum can rightly be called a “**fingerprint of a star.**” Spectra reveal the composition, temperature, and movement of stars. In the past, only professionals had the skill and equipment to study spectra. Recently, the cost and complexity of the necessary hardware and software has dropped enormously. Today, you can easily study the spectra of stars and planets with a minimum of expense. If you have a telescope and a CCD camera (even a webcam or DSLR), then all you need is an inexpensive Star Analyser grating and the RSpec software. It’s an exciting pursuit. We invite you to join the growing num-

ber of amateur astronomers who have discovered the thrilling adventure of spectroscopy!

### **Wed, Dec 4, 2013**

## **Inaugural Heidi Winter Lecture**



Dr. Ed Murphy will be our speaker this month to our annual Heidi Winter Lecture. We will meet at the NRAO building down the hill from McCormick Observatory at 7 pm. This will also be the Charlottesville Astronomical Society’s December meeting. Details to follow!

### **Wed, Jan 8, 2014**

Join MESSENGER team member Mark ‘Indy’ Koche as he takes you on a journey to one of the most elusive bodies in our Solar System, where not even the vaunted

Hubble Space Telescope can peer.



### ***For the World has Hollows, and I have Touched the Ice – The Greatest, Latest MESSENGER Findings on Mercury***

On March 18, 2011, space exploration history was made when the MESSENGER spacecraft became the first probe from Earth to go into orbit around Mercury. Since that time, it has taken more than 170,000 images and made millions of spectra observations.

From all this more has been learned about our solar system’s innermost world than had been dreamed to ask at the onset of the mission. From newly seen impact basins to the surprising status of the magnetic field, from the

make up of the exosphere to the verification of water ice at the poles and to the discovery of geologic features not found on any other body in the solar system,

MESSENGER's discoveries at Mercury have reshaped the theories planetary geologists have had on the origins of the solar system's littlest planet (as an aside, Pluto is king of a whole separate category of objects).

**Wed, Feb 5, 2014**



Greg Brown, the Education and Space Settlement Representative for the Mars Foundation will be presenting a lecture on the Mars' Hillside Settlement at UVa's McCormick Observatory on Feb. 5, 2014 starting at 6:45 pm.

## ***Quality and Effectiveness***

As a means of ensuring that every CAS Astro-OP effort realizes the same consistent professionalism and quality standards, reflective of the Society's image, we are initiating a pre-effort support (activity, event, meeting, etc.) checklist and post-effort feedback reporting

The CAS Astro-OP Provider will confer with the Educator/Individual Point of Contact (POC) for the school or organization to complete the checklist prior to the support activity, event, or meeting.

After completion of the Astro-OP activity, event, or meeting, we request that the School or Organization's POC complete and mail/email the feedback survey form to the CAS President or Astro-OP Coordinator.

Our intent is to ensure that your school or organization receives support with the highest standards of professionalism and quality from CAS while fostering continuous improvement. And, you are essential to helping us maintain our professional and quality standards.

## ***Build A Telescope***

To celebrate Astronomy Day the Charlottesville Astronomical Society is sponsoring a Build A Telescope Workshop for grade 4 through 12 students accompanied by a parent or designated guardian. Attendees in this workshop will make their own 114 mm, f4.5 Newtonian telescope to take home and will be provided information on how to use it and what they can find with it in the night sky.



### **CAS 114 mm, f/4.5 Newtonian Telescope**

\$50 covers the cost of the telescope and materials. This event is limited to 12 student/parent pairs and will be conducted at McCormick Observatory. For more information or to register, contact Steve Layman:

[slayman2528@comcast.net](mailto:slayman2528@comcast.net)

## ***JMU's Planetarium***

The 2013 inaugural John C. Wells Planetarium Space Camp at James Madison University was a great success with 81 Space Explorer campers, 21 from a visible minority and 26 females (21 students were from Page County, a noted disadvantaged area). Photos, press coverage, and a cool video played for parents of the camp's "Space Explorers" at last year's closing ceremonies can be found at:

<http://www.jmu.edu/planetarium/SpaceCamp.shtml>

In addition to using the JMU's John C. Wells \$2M, state-of-the-art hybrid planetarium (the only one of its kind in the world) and its "Science on the Sphere" installation, there were two NASA guest speakers at the 2013 space camp.

The Space Explorers met and spoke with Astronaut, Dr. Franklin Chang Diaz, the first Hispanic-Chinese-American in space and with seven Space Shuttle flights, he is also the record holder for the most flights flown!

The Space Explorers also spoke with NASA/Langley Engineer, Dr. Jennifer Prince, a member of the Entry, Descent and Landing team for NASA's Mars Curiosity Rover that landed August 6, 2012 on Mar's Gale Crater.

JMU's space camp provides:

1. **Students** with robust, hands-on activities as the scientist or engineer solving real-world problems,
2. **Pre-Service Teachers** with real-world experiential opportunities to better prepare for teaching science when they have their own classrooms,
3. **Area Teacher's** with a week-long pre-camp workshop to learn content, pedagogy, and acquire NASA educational material for their classrooms.

The dates for JMU's Space Camp 2014 are already set for both residential (overnight) and day campers. The residential Space Explorer camp, for 7th to 10th graders runs from Sunday, July 6th to Sunday, July 13th. The Space Explorer campers staying on-campus will also experience nighttime astronomy activities. On Friday, July 11<sup>th</sup> and Saturday, July 12<sup>th</sup>, they will experience the dark skies 45 minutes West of JMU, where you can still see the Milky Way.

The 2014 Space Explorer Day Camp targets rising 5th to 8th grade students and will run from Monday, July 21st to Friday, July 25<sup>th</sup>.

Lastly, prior to the 2014 Space Camp, JMU has scheduled a Teacher and

Camp Staff Workshop for the week of June 23rd.

Because JMU wanted to ensure that ALL students had an opportunity to attend our Space Camp and not just those who could afford to do so, significant funding was received from NASA/Langley, allowing tuition waivers for approximately a third of the "Space Explorers" – those from the under-represented groups. (*Note: Under-represented groups are defined very broadly by student ethnicity, gender, home-schooled, and socio-economic status*).

Details as well as registration information for 2014 may be found on the space camp website:

<http://www.jmu.edu/outreach/spacecamp.shtml>

## ***About CAS***

The Charlottesville Astronomical Society is an organization, founded to promote the enjoyment of observing the stars and planets. CAS caters to individuals of all ages and levels of astronomical experience. We wish to interest the public in astronomy through naked-eye, telescopic, and binocular viewing as well as through talks our organization sponsors.

## ***Astronomy Links***

**Charlottesville Astronomical Society :** <http://cvilleastro.com/>

**Star Size Comparison Video:** <http://www.youtube.com/watch?v=HEeh1BH34Q>

**Heavens Above:** <http://www.heavens-above.com/>

**Lowell Observatory:** <http://www.lowell.edu/>

**UA Lunar and Planetary Sciences:** <http://www.lpl.arizona.edu/>

**Planetary Science Institute:** <http://www.psi.edu/>

**Mount Graham International Observatory:** <http://mgpc3.as.arizona.edu/>

**Lunar and Planetary Institute:** <http://www.lpi.usra.edu/>

**Kitt Peak National Observatory:** <http://www.noao.edu/kpno/>

**Kansas Comosphere and Space Center:** <http://www.cosmo.org/>

**Clear Sky Chart Home Page:** <http://cleardarksky.com/csk/>

**US Naval Observatory:** <http://www.usno.navy.mil/USNO/astronomical-applications>

**Citizen Science Alliance:** <http://www.citizensciencealliance.org/>

**The Exploratorium (A 21<sup>st</sup> – Century Learning Laboratory)** <http://www.exploratorium.edu/>

**The AIAA Foundation wants to help you make science, technology, engineering, and math (STEM) become real in your classroom - AIAA Foundation Classroom Grant Program:**

<http://www.aiaa.org/Secondary.aspx?id=4184&terms=grants%20to%20schools>

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**NASA Science – Citizen Science:** <http://science.nasa.gov/citizen-scientists/>

**NASA Educator Links:**

<http://www.nasawavelength.org/>

<http://www.nasa.gov/offices/education/about/sequestration-NASA-education-guidance.html#.Umg6wvkqg8w>

<http://www.nasa.gov/audience/foreducators/#.Umg57Pkqg8w>

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**From:** NASA Education [mailto:[education@nasa.gov](mailto:education@nasa.gov)]  
**Sent:** Thursday, September 26, 2013 2:29 PM  
**To:** [slayman2528@comcast.net](mailto:slayman2528@comcast.net)  
**Subject:** NASA Education Express Message -- Sept. 26, 2013

### **Guidance for Education and Public Outreach Activities Under Sequestration**

NASA has taken the first steps in addressing the mandatory spending cuts called for in the Budget Control Act of 2011. The law mandates a series of indiscriminate and significant across-the-board spending reductions totaling \$1.2 trillion over 10 years.

As a result, NASA has been forced to implement a number of new cost-saving measures, policies, and reviews in order to minimize impacts to the mission-critical activities of the Agency. Guidance regarding conferences, travel, and training that reflect the new fiscal reality in which the agency must operate has been provided.

For specific guidance as it relates to public outreach and engagement activities please reference the following webpage.

<http://www.nasa.gov/offices/education/about/sequestration-NASA-education-guidance.html>

*Check out the following NASA opportunities for the education community. Full descriptions are listed below.*

#### **MissionSTEM Diversity & Inclusion Leadership Video Series**

Audience: All Educators

#### **Centaur Design Challenge**

Audience: Educators of Grades 7-9 in the Cleveland, Ohio Area

EXTENDED Registration Deadline for Educator Professional Development: Sept. 26, 2013

Registration for the Challenge Opens on Oct. 1, 2013

#### **Free Education Webinar Series from the Aerospace Education Services Project**

Audience: K-12 Educators

Next Event Date: Sept. 26, 2013, at 7 p.m. EDT

#### **NASA's Digital Learning Network Event -- Radio Astronomy in the Classroom**

Audience: Grades K-12

Event Date: Sept. 27, 2013, 1 - 2 p.m. EDT

#### **REGISTRATION EXTENDED: Zero Robotics High School Tournament 2013**

Audience: 9-12 Educators and Students

Practice Competition: In progress

Registration deadline: Sept. 27, 2013

#### **Mars Educator Conference at Arizona State University**

Audience: All Educators

Conference Date: Sept. 28, 2013

#### **Solar System Ambassadors Program Accepting Applications**

Audience: All Educators

Application Deadline: Sept. 30, 2013

#### **IRIS Challenge: Tracking a Solar Storm**

Audience: 6-12 Educators

Registration Open Now, Challenge Begins October 2013

#### **NES Web Seminar -- Chemistry of Water: Mars Exploration -- Is There Water on Mars?**

Audience: 9-12 and Informal Educators

Event Date: Oct. 1, 2013, at 7:30 p.m. EDT

**Robert Noyce Fellowship in Informal STEM Learning**

Audience: All Educators

Application Deadline: Oct. 1, 2013

**Green Strides Webinar Series**

Audience: K-12 Educators

Next Event Date: Oct. 2, 2013, at 4 p.m. EDT

**NES Web Seminar -- Linear Equations: NASA CONNECT -- Breaking Barriers**

Audience: 6-8 and Informal Educators

Event Date: Oct. 3, 2013, at 7:30 p.m. EDT

**Celebrate World Space Week**

Audience: All Educators

Event Date: Oct. 4-10, 2013

**Heritage Family Day Events at Smithsonian's Air and Space Museum**

Audience: All Educators and Students

Next Event Date: Oct. 5, 2013

**Celebrate Flight at the International Balloon Fiesta**

Audience: All Educators and Students

Event Date: Oct. 5-13, 2013

**Celebrate Earth Science Week With NASA's Mapping Our World Interactive**

Audience: All Grade Levels

Event Date: Oct. 13-19, 2013

**Historical NASA Space Artifacts Available for Educational Use**

Audience: Educational Institutions, Museums and Other Education Organizations

Deadline: Oct. 21, 2013

**2014 NASA Space Technology Research Fellowships**

Audience: Higher Education Students

Application Deadline: Nov. 13, 2013

**2014 RASC-AL Robo-Ops Competition**

Audience: Higher Education Students

Proposal Deadline: Dec. 8, 2013

**NASA Exploration Design Challenge**

Audience: K-12 Educators and Students

Virtual Crew Registration Deadline: March 14, 2014

**Frequently Asked Questions -- NASA Research Announcement (NRA) Competitive Program for Science Museums, Planetariums, and NASA Visitor Centers Plus Other Opportunities (CP4SMP+) (Announcement Number: NNH13ZHA001N, Catalog of Federal Domestic Assistance (CFDA) Number: 43.008)**

Audience: Informal Education Institutions

**Don't miss out on upcoming NASA education opportunities.**

For a full list of events, opportunities and more, visit the Educator and Student Current Opportunity pages on NASA's website:

-- Educators <http://www.nasa.gov/audience/foreducators/current-ops-index.html>

-- Students <http://www.nasa.gov/audience/forstudents/current-ops-index.html>



## ***Astronomy Resources*** - compiled by Steve Layman, CAS

### **Handbook for Astronomy Educators – A Course Planning Guide**

Flick, Ventre, Boothe, Rutherford  
Astronomical League  
Science Service Building  
1719 N. Street NW  
Washington, DC 20030  
Published by the Astronomical League

### **A+ Projects in Astronomy**

Winning Experiments for Science Fairs AND Extra Credit  
Janice Van Cleave  
John Wiley and Son Publisher  
Isbn: 0-471-32820-0

### **Practical Astronomy – A User Friendly Handbook**

H. Robert Mills  
Albion Publishing  
Isbn: 1-898563-00-4

### **Eight Easy Observing Projects for Amateur Astronomers**

David Cortner and Nancy Hendrickson  
Kalmbach Books  
Isbn: 0-913135-25-5

### **Out of this World Astronomy – 50 Amazing Activities and Projects**

Joe Rhatigan and Rain Newcomb  
Lark Books  
Isbn: 1-57990-675-3

### **Astronomy for All Ages – Discovering the Universe through Activities for Children and Adults**

Philip Harrington and Edward Pascuzzi  
Globe Pequot Press  
Isbn: 0-7627-0809-3

### **Cosmos in the Classroom – Published most recently in 2010**

A Hands on Symposium on Teaching Introductory Astronomy  
Published by the Astronomical Society of the Pacific  
[www.astrosociety.org](http://www.astrosociety.org)