BACK BAY observer

The Official Newsletter of the Back Bay Amateur Astronomers
P.O. Box 9877, Virginia Beach, VA 23450-9877

EPHEMERALS november 2014

11/06, 7:30 pm
BBAA Monthly Meeting
TCC Campus, VA Beach
Building J, Rm JC-13

11/07, 7:00 PM
Garden Stars
Norfolk Botanical Garden

11/14, 5:00 PM
Skywatch
Northwest River Park

11/22, 4:00 PM
Nightwatch
Chippokes Plantation
Surry, VA

Looking Up!

Thank goodness for the end of Daylight Savings time! Now we can all get out earlier in the evening or get up early in the morning and still be able to see something. While I enjoy the summer months, I like the cooler weather better.

Last month, I and many other BBAA members attended the East Coast Star Party in Coinjock, NC. The weather was excellent all three days and we had a wonderful view of the partial eclipse of the sun as it set on the first day of the star party. I'm pretty sure the locals were wondering what all the crazy people were doing with cameras along the causeway. It was a very nice view even if it only lasted for 20 minutes or so.

Kent's party is always a great place to come and hang out, with or without a scope. There is lots of food, beverages, fun, and good people, and it's always great to see those folks who do not live in the local area.

A reminder for all that this month we have our club elections during the monthly meeting at TCC. Please come and vote for who you want to lead the BBAA.

Until next time...

Jim Tallman

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October 2, 2014 Meeting Minutes

The October meeting was called to order at 7:31 PM by President Jim Tallman. Initial discussion points included:

- There is no VAAS this year. The club responsible for hosting this year, the Norfolk Astronomical Society, was plagued with problems preventing a successful presentation.
- It was announced that our Newsletter Editor, Paul Tartabini, was nominated for and won 3rd place in the National Astronomical League's Mable Stern's newsletter award for excellence. CONGRATULATIONS PAUL!!!!

Treasurer's Report:

- The Treasurer, Chuck Jagow, reports that the club currently holds $3,380.86 that is split between the general Fund at $1,391.19 and the Scholarship Fund at $1,989.67. It was noted that BBAA had received the proceeds from the city of Virginia Beach for the five 2014 sessions of Boardwalk Astronomy.

ALCOR's Report:

- The ALCOR Bill McLean reports that several folks have completed programs and have earned certificates. The individuals were name and recognized by the members present:
    1. Dino Giangregorio - Astronomy Outreach Certificate
    2. Ben Loyola - Messier Certificate

  Congratulations were heartily conveyed by all present. Bill adamantly invited others to engage and complete Astronomical League observing club/programs.

Rapid Response Robotic Telescope (RRRT):

- Lawrence "Bird" Taylor reported that he is still endeavoring to acquire a set of keys to the observatory at Fan Mountain and encouraged others to submit proposals for use of the RRRT. Bird also reported that he believed much of the RRRT system was operational, but may require some additional "tweaking" to enhance performance. The efforts to bring SkyNet to the RRRT are in progress as well. Bottom line is that the RRRT is up and ready for business, we just need to get some proposals for use to Dr. Salgado.

Bill McLean, club Astronomical League Coordinator, passes out awards to Dino Giangregorio (top) and Ben Loyola (bottom) at the October meeting.

New Business:

- The club's officer elections will be conducted at the November meeting. Current president Jim Tallman has indicated that because of his increased school and work commitments he does not desire to continue as President.
- The BBAA officer terms are for one year, however, the constitution and by-laws allow an officer to hold the position for a maximum of two years. After two years the position must be filled with a new individual. The remaining officers holding the positions of VP, Secretary and Treasurer have expressed that they are willing to continue in the following year.
- Nominations for ANY of the positions are solicited and can be voted on; however, the position of President is apparently the only position we need to fill. If anyone has an inkling of desire to be President, DO NOT HESITATE to "toss your hat into the ring."

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The Back Bay Amateur Astronomer's
Observer

The BBAA Observer is published monthly; the monochrome version is mailed to members who do not have internet access. Members who do have Internet access can acquire the full color version on the Internet at **http://www.backbayastro.org/observer/newsletter.shtml**

Please submit articles and items of interest no later than the date of the monthly meeting in order to be in the next month's edition.

Please submit all items to: bbaa.newsletter@gmail.com or BBAA Observer, P.O. Box 9877, Virginia Beach, VA

BBAA Meetings

The BBAA meet the first Thursday of every month except for July. While school is in session, we meet at the VA Beach TCC Campus. The Nov. 6, 2014 meeting will be held at TCC in Virginia Beach, Building J, Rm JC-13 (or nearby room) at 7:30 PM. Directions are on our Night Sky Network page.

BBAA Internet Links

BBAA Website
www.backbayastro.org

Yahoo! Groups
tech.groups.yahoo.com/group/backbayastro

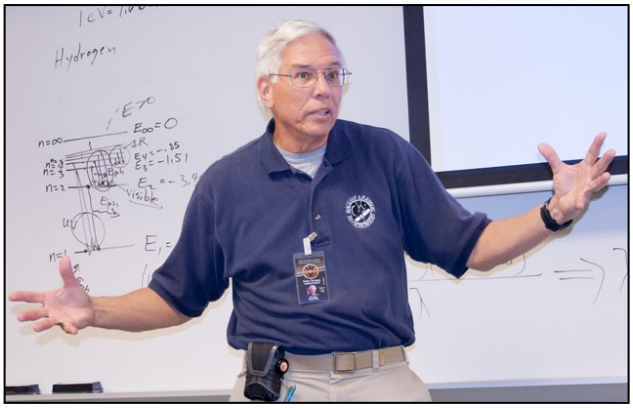
BBAA Observer Newsletter
www.backbayastro.org/observer/newsletter.shtml

October Minutes, continued from page 2

- The December Luncheon is currently scheduled for Saturday December 13th at noon to be held at Tripps. Bill McLean has volunteered to make arrangements with the restaurant.
- Much discussion ensued concerning outreach with many members chiming in on the personal rewards of providing public outreach in an attempt to encourage more support by the members.

Presentation:

- George Reynolds gave an excellent presentation on the moon, indicating the type of presentations he provides for outreach.



George Reynolds describes the joy of observing the Moon at the October BBAA meeting. (meeting pictures courtesy of Bird Taylor)

Minutes taken by Treasurer Chuck Jagow
Minutes were modified due to space constraints. See full minutes at backbayastro.org/minutes/2014-10-minutes.pdf

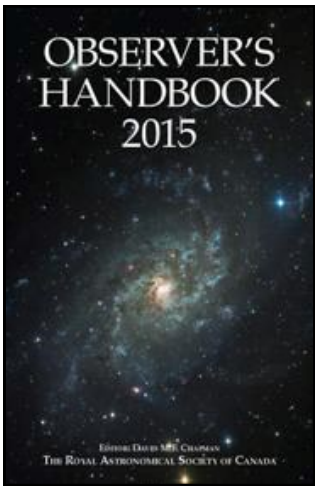
What is the RASC Handbook?

By George Reynolds

The *Observer's Handbook* of the Royal Astronomical Society of Canada (RASC) is a must-have item for the serious amateur astronomer. It contains a wealth of information useful to amateurs at all levels, from the newest "newbie" to the oldest, wizened "star geezer."

The *Observer's Handbook* is a 352-page guide published annually since 1907 by The Royal Astronomical Society of Canada. Through its long tradition and the expertise of more than 60 contributors, the *Observer's Handbook* has come to be regarded as the standard North American reference for data on the sky. The material in the Handbook is of interest to professional and amateur astronomers, scientists, teachers at all levels, students, science writers, campers, Scout and Guide leaders, as well as interested general readers. The *Observer's Handbook* is an integral part of many astronomy courses at the secondary and university levels, and it should be on the reference shelf of every library.

Among its many highlights is a glossary and index of key astronomy terms. The text includes valuable explanations of astronomical terms, symbols, optics, weather, time scales, magnitudes, polar alignment, light pollution (and what we can do about it), and observing tips and techniques. It is a valuable resource for teaching astronomy, with easy-to-understand explanations of the Sun, Moon, planets, Solar System, and the night sky, including comets, meteors, and asteroids. It has a month-by-month calendar of astronomical events, including when to look for such things as phases of the Moon, lunar and solar eclipses, meteor showers, best times to view the planets, and the appearances and locations of the moons of Jupiter and Saturn....and much, much more. It is a whole library in a small handbook that you can use to plan your observing sessions, keep by your telescope when observing, or just read for enjoyment on cold and rainy days.



If an individual orders a copy of the handbook directly from RASC in Canada, the cost is $27.95 plus $11 shipping and handling, for a total of $38.95. If a bulk order is placed, the costs come down to $26.95 for two to nine copies, or $23.95 for 10 to 25 copies. Those prices include shipping & handling. Each year the BBAA places an order for more than ten copies, so we get the reduced price of about $24. For a limited time, the Astronomical League has the handbook on sale for $27.00 each. The URL can be found by doing a search on "astro league rasc handbook" or at the link:

http://tinyurl.com/lbsq6ff.

Reserve Your Copy Now!!!

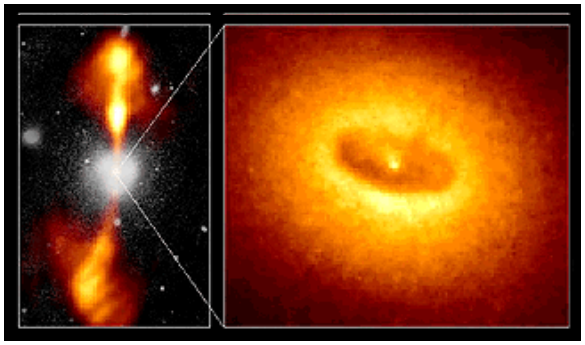
If you are interested in getting a copy of the 2015 RASC Observer's Handbook, contact club VP George Reynolds at pathfinder027@yahoo.com. Payment of $24 in advance is requested, via cash, check, or PayPal. If using PayPal, the cost is $25 to cover the PayPal fee. Orders will be taken until November 20th, so if you want the big discount, place your order early. If you live outside the Hampton Roads area, please include your mailing address and a bit extra to cover postage (about three or four dollars). When the handbooks arrive, sometime in December or January, they will be passed out at the next BBAA meeting and/or Skywatch.

University Report | Nick Anderson

As he enters the home stretch of his undergraduate education, Nick's assignments are becoming more fascinating!

Many of you have asked me in recent months as to what research I am performing this semester. I have been tasked with an observational astronomy project involving quasar outflow. As most of you probably already know, quasars are some of the most luminous objects in the Universe and are caused by active galactic nuclei (AGN)—the accretion of matter around a supermassive black hole at the nucleus of a galaxy. Generally speaking, AGN are a part of the early Universe, and thus appear highly redshifted to us.

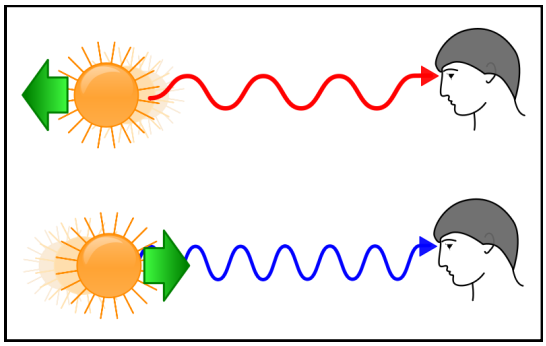
Specifically, I am examining the velocity spectrum of the quasar with the "very original" name of SDSSJ121441.42-000137.8. It has a redshift of z=1.045. Recall that a redshift of z=1 implies the observed wavelengths (denoted by the greek letter, λ) will be double that of the emitted. In other words, your green astronomy pointer (λ=432 nanometers) would appear in the infrared from there! The quasar has a visual apparent magnitude of 19.1, well beyond the capability of most amateur telescopes. However, my observational data is from the Combined Array for Research in Millimeter-wave Astronomy (CARMA), a radio interferometer in Inyo County, California.



A Hubble Space Telescope image of a quasar at the center of a barred galaxy. (Image credit: NASA/Hubble). Click here for more information.

The quasar features blueshifted molecular gas relative to the quasar's expected recession velocity (given by the expansion rate of the Universe, via Hubble's law). My job is to determine how blueshifted the Carbon Monoxide (CO) line is, what its width is (in kilometers per second), and roughly what mass it implies. If things go incredibly well, it could result in a publication with my name on it and an opportunity to present my results at a professional conference in the spring!

However, these achievements are surprisingly considered secondary to my research advisor. Most of all, he wants to see me develop my abilities as a researcher and come out better prepared for graduate school, which doesn't necessarily entail producing results from my research, though it certainly wouldn't hurt!.



A redshift or blue shift is caused by the movement of a light source toward or away from an observer. A blueshift is a decrease in wavelength from a source moving towards us, while a red shift is an increase due to a source moving away from us. In visible light, a blue shift shifts the color from the red end of the spectrum towards the blue end. (image source: Wikipedia).

Nick Anderson inside the control room at the National Radio Astronomy Observatory's 140-ft telescope at Green Bank, WV.

Nick Anderson is a student at Virginia Tech studying physics and astronomy and is president of the VT Astronomy Club. See Nick's latest observations at his website: www.messierthanacomet.com.

Fall 2014 East Coast Star Party Report

By Kent Blackwell

I wish to thank everyone who attended my East Coast Star Party October 23-25, 2014, and what a great star party it was! Except for an hour of fast moving clouds early Thursday evening, the sky was clear all weekend.

At the October 2013 ECSP, a partial solar eclipse occurred at the end of the party. This year a partial eclipse occurred at the beginning! What are the astronomical chances of that?

Only a handful showed up on Thursday but by Friday and Saturday the observing area was packed with eager stargazers. I showed dozens of people the usual "show" objects through my 25" scope, and all were delighted at the views.

There may be larger star parties but thanks to Dee Diffrient one won't find better home cooked meals than at ECSP, and free at that. She prepared pulled pork sandwiches Thursday, gallons of several types of unbelievable spaghetti on Friday, a trip to Mel's Diner for breakfast on Saturday, hors d'oeuvres with wine and cheese Saturday afternoon, and our usual cookout on Saturday with chefs Bob Hitt and son Scott grilling up to 70 hamburgers and 80 hot dogs. We even grilled hot dogs Saturday at midnight. ECSP has become a real food fest!

I hope everyone had a good time. I prefer keeping our gathering small because we're all gathered in a relatively small space and, therefore, ECSP has a more intimate feel than other star parties.

SCENES FROM THE FALL 2014 EAST COAST STAR PARTY:

Clockwise from Top Left: A delightful view of the setting, partially eclipsed sun from the Coinjock causeway (Kent Blackwell). A closeup of the Sun showing the silhouette of the Moon and a giant cluster of sunspots (Kent Blackwell). An aerial view of the observing area courtesy of Bob Beuerlein's flying drone. Winner of the Halloween Costume Contest, George Reynolds, King of the Wild Frontier.

NASA's Space Place

Old Tool, New Use: GPS and the Terrestrial Reference Frame

By Alex H. Kasprak

Flying over 1300 kilometers above Earth, the Jason 2 satellite knows its distance from the ocean down to a matter of centimeters, allowing for the creation of detailed maps of the ocean's surface. This information is invaluable to oceanographers and climate scientists. By understanding the ocean's complex topography—its barely perceptible hills and troughs—these scientists can monitor the pace of sea level rise, unravel the intricacies of ocean currents, and project the effects of future climate change.

But these measurements would be useless if there were not some frame of reference to put them in context. A terrestrial reference frame, ratified by an international group of scientists, serves that purpose. "It's a lot like air," says JPL scientist Jan Weiss. "It's all around us and is vitally important, but people don't really think about it." Creating a frame of reference is more of a challenge than you might think, though. No point on the surface of Earth is truly fixed.

To create a terrestrial reference frame, you need to know the distance between as many points as possible. Two methods help achieve that goal. Very-long baseline interferometry uses multiple radio antennas to monitor the signal from something very far away in space, like a quasar. The distance between the antennas can be calculated based on tiny changes in the time it takes the signal to reach them. Satellite laser ranging, the second method, bounces lasers off of satellites and measures the two-way travel time to calculate distance between ground stations.

Weiss and his colleagues would like to add a third method into the mix—GPS. At the moment, GPS measurements are used only to tie together the points created by very long baseline interferometry and satellite laser ranging together, not to directly calculate a terrestrial reference frame.

"There hasn't been a whole lot of serious effort to include GPS directly," says Weiss. His goal is to show that GPS can be used to create a terrestrial reference frame on its own. "The thing about GPS that's different from very-long baseline interferometry and satellite laser ranging is that you don't need complex and expensive infrastructure and can deploy many stations all around the world."

Feeding GPS data directly into the calculation of a terrestrial reference frame could lead to an even more accurate and cost effective way to reference points geospatially. This could be good news for missions like Jason 2. Slight errors in the terrestrial reference frame can create significant errors where precise measurements are required. GPS stations could prove to be a vital and untapped resource in the quest to create the most accurate terrestrial reference frame possible. "The thing about GPS," says Weiss, "is that you are just so data rich when compared to these other techniques.

You can learn more about NASA's efforts to create an accurate terrestrial reference frame here :

http://space-geodesy.nasa.gov

Artist's interpretation of the Jason 2 satellite. To do its job properly, satellites like Jason 2 require as accurate a terrestrial reference frame as possible. Image courtesy: NASA/JPL-Caltech.

November 2014

BBAA Events	Special Outreach	Astronomical Events
11/06 BBAA Monthly Meeting		11/6 Full Moon
11/07 Garden Stars @ Norfolk Botanical Gardens	11/08 Virginia Living Museum Star Party	11/14 Last Quarter Moon
11/14 Skywatch @ Northwest River Park		11/17-18 Leonid Meteor Shower
		11/22 New Moon
11/22 Nightwatch @ Chippokes Plantation		11/29 First Quarter

Sneak Peek into December

Thu 12/04/2014 Monthly Meeting, TCC, 7:30 pm
Fri 12/12/2014 Skywatch at Northwest River Park, 5:00 pm
Sat 12/13/2014 Annual BBAA Luncheon at Tripps Restaurant, 12:00 PM
Sat 12/20/2014 Nightwatch at Chippokes State Park, Surry VA.