



Star Stuff

Ford Amateur Astronomy Club Newsletter

Volume 26, Number 3

April 2016

Hubble Shatters the Cosmic Record

For Most Distant Galaxy

By Ethan Siegel

The farther away you look in the distant universe, the harder it is to see what's out there. This isn't simply because more distant objects appear fainter, although that's true. It isn't because the universe is expanding, and so the light has farther to go before it reaches you, although that's true, too. The reality is that if you built the largest optical telescope you could imagine -- even one that was the size of an entire planet -- you still wouldn't see the new cosmic record-holder that Hubble just discovered: galaxy GN-z11, whose light traveled for 13.4 billion years, or 97% the age of the universe, before finally reaching our eyes.

There were two special coincidences that had to line up for Hubble to find this: one was a remarkable technical achievement, while the other was pure luck. By extending Hubble's vision away from the ultraviolet and optical and into the infrared, past 800 nanometers all the way out to 1.6 microns, Hubble became sensitive to light that was severely stretched and redshifted by the expansion of the universe. The most energetic light that hot, young, newly forming stars produce is the Lyman- α line, which is produced at an ultraviolet wavelength of just 121.567 nanometers. But at high redshifts, that line passed not just into the visible but all the way through to the infrared, and for the newly discovered galaxy, GN-z11, its whopping redshift of **11.1** pushed that line all the way out to 1471 nanometers, more than double the limit of visible light!

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Presidents Article

By Timothy Campbell

Statewide Astronomy Night

On April 15th we participated in an outreach event for the Michigan State University "Statewide Astronomy Night" (SWAN). Our club set up at the Michigan Science Center location which also hosted the Global Space Party (Yuri's Night). The Science Center counted about 600 guests to the party and I'm convinced most of them came to look through the telescopes

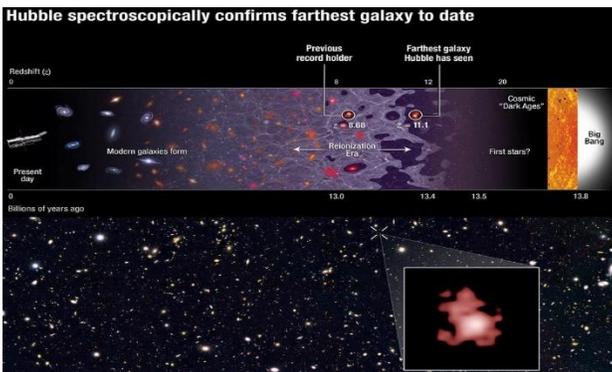
Urban Light pollution made viewing deep-space objects difficult, but the night still put on a very nice show for our guests. The event started at 7PM even though sunset wasn't until just slightly after 8pm. Most of us started with various views of the moon prior to sunset, followed by Jupiter once it managed to clear the roof-tops.

Jupiter offered transits of both Io and the Io shadow transit, followed by Europa and the Europa shadow transit. The Great Red Spot was also transiting the entire time. In the midst of this, we also had a high ISS pass and John McGill commented that for most, it seemed to be the first time they had ever seen the ISS.

John McGill, Jessica Edwards and I were there as well as Diane Hall and Jonathan Kade from the Warren club. The Visitors seemed to thoroughly enjoy the views through the telescopes and we received many positive comments.

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Hubble itself did the follow-up spectroscopic observations to confirm the existence of this galaxy, but it also got lucky: the only reason this light was visible is because the region of space between this galaxy and our eyes is mostly ionized, which *isn't true* of most locations in the universe at this early time! A redshift of 11.1 corresponds to just 400 million years after the Big Bang, and the hot radiation from young stars doesn't ionize the majority of the universe until 550 million years have passed. In most directions, this galaxy would be invisible, as the neutral gas would block this light, the same way the light from the center of our galaxy is blocked by the dust lanes in the galactic plane. To see farther back, to the universe's first true galaxies, it will take the James Webb Space Telescope. Webb's infrared eyes are much less sensitive to the light-extinction caused by neutral gas than instruments like Hubble. Webb may reach back to a redshift of 15 or even 20 or more, and discover the true answer to one of the universe's greatest mysteries: when the first galaxies came into existence.



Treasurers Report

April 12th 2016

By Gordon Hansen

6:35 PM
04/12/16
Accrual Basis

Ford Amateur Astronomy Club Balance Sheet As of April 12, 2016 Apr 12, 16

ASSETS

Current Assets

Checking/Savings

10000 · Checking \$ 138.72

11000 · FAAC Savings

11100 · FAAC Club Savings \$ 2,684.50

11200 · Equipment \$ 2,089.23

11300 · Scholarship \$ 391.26

11400 · GLAAC \$ 6,575.37

Total 11000 · FAAC Savings \$ 11,740.36

12000 · Petty Cash Account \$ 121.44

13000 · CD's

13100 · CD 200599272 \$ 1,063.73

13200 · CD 205196033 \$ 1,008.33

13300 · CD 89265268 \$ 1,112.49

Total 13000 · CD's \$ 3,184.55

Total Checking/Savings \$ 15,185.07

Total Current Assets \$ 15,185.07

TOTAL ASSETS

\$ 15,185.07

LIABILITIES & EQUITY

Equity

30000 · Opening Balance Equity \$ 8,890.38

32000 · Retained Earnings \$ 5,573.02

Net Income \$ 721.67

Total Equity \$ 15,185.07

TOTAL LIABILITIES & EQUITY \$ 15,185.07

FAAC Speaker Schedule

FAAC Speaker Schedule			
April 28	Presentation	Bob Berta	Archeo Astronomy in the British Isles
	Tech Talk	Chuck Jones	Remote Setup for Imaging
May 26	Presentation	Dr. Nicolle Zellner	Impacts in the Earth-Moon System, What, When and Why
	Tech Talk	Gordon Hansen	FAAC canon 60Da

Presidents Article

By Timothy Campbell

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Annual Club Banquet

Everything is locked in for our annual club banquet scheduled for Saturday May 21. The club traditionally selects the Saturday in May nearest the full-moon (to avoid conflict with good observing nights).

This year the date falls on a *true* blue moon. The original definition of a blue moon referred the extra full moon that might occur in a year. A calendar year should normally have 12 full moons without quiet enough for a 13th. But in some years there are 13 full moons during the year. In that year, one particular season will have the extra (4th within its season) full moon and (to make things more complicated) it's the third out of the four full moons within the same calendar season that is designated as the blue moon – not the fourth. The notion that the 2nd full moon within a single calendar month is a blue moon is more of a modern idea. By the original definition, May 21 is legitimately a blue moon.

The banquet will be held at Karl's Cabin in Plymouth (our usual location in recent years). You can lock in your banquet reservation now. The banquet includes dinner, coffee or a soft drink and desert. Adult beverages are available at the bar, but not included (cash bar).

This year Tim Dey will host the Astro-Jeopardy content (Gordon is out of town). Pat Korody has worked year-round to find interesting astronomy-related door prizes.

Dinner will offer choices of either a fish, chicken, or steak entrée. Karl's Cabin can make vegetarian options as well, so if you are a vegetarian, please just let us know when you make the reservation. When you make your reservation for the banquet, please indicate your choice. Karl's Cabin has kept the prices the same on both the fish and chicken entrées, but the price for the steak has increased.

The price for the annual banquet is \$35 per person unless you opt for the steak, which is \$45 (Karl's

Cabin did increase the cost of the steak this year but other prices have remained the same.)

The banquet is not a fund-raising event for the club. We set a price which should arrive at close to a break-even for the cost of the event — but each year it's usually a little bit of a loss (and we're ok with that). We try to keep the prices as low as possible for this event.

Cocktails start at 6pm (remember, it's a cash bar for cocktails) and dinner starts at 7pm.

There will be a featured keynote speaker, the Sirius Award presentation, Astro Jeopardy, and the door prizes.

Contact Gordon Hansen to reserve your seats (and your meal choices). Please get payment to Gordon either by bringing a check or cash to a club meeting or by mailing it to him (via the club P.O. Box address). You can contact Gordon via his email address: treasurer@fordastronomyclub.com

I hope to see you at the Banquet!

Lastly, don't forget the Transit of Mercury is on May 9th starting at about 7am (ending just before 3pm.) The club will be operating the observatory at Lincoln Park Middle School for the students and would appreciate extra members with solar telescopes. Also, several members intend to set up at a park in Lyon Township behind the town municipal center (the address is 58000 Grand River Avenue, New Hudson, MI)

Meteor Colors - Submitted by Greg Ozimek



Secretary Report

By Jessica Edwards

Member Observations and Whats up

There was limited viewing this month owing to all the clouds. Several members had some views of Jupiter when things cleared up. This month the five naked eye planets can all be viewed at various times of night. On 5 April, there will be 2 shadows of the moons of Jupiter visible on the planet early in the morning. Hopefully there will be a few clear nights to go out and get a good look.

Main Talk – Pluto by Steve Uitti

Steve presented lots of images and information that has been returned from the New Horizons probe that passed Pluto last year. The instruments RALF and ALICE have provided much insight to the composition, surface features, and atmosphere. Data is still coming in and many new papers are currently being published on the cold, distant dwarf planet.

For the Young Astronomers

Why does the Sun burn us

The sun keeps our planet warm enough for living things to thrive. It gives us light so we can see. But it can also burn us. What causes these burns?

All About Energy

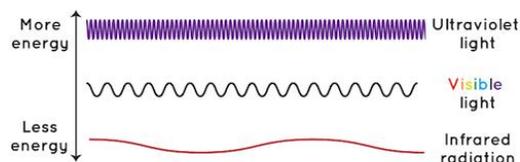
The sun sends lots of energy toward us all the time. There are a few different kinds of energy. There is infrared radiation, which is heat. There is visible light, which is what our eyes can see. There is also ultraviolet light. We can't see ultraviolet with our eyes, but it's there. And it can burn our skin.

Waves, Waves, Waves

Infrared radiation, visible light, and ultraviolet light are all types of waves in the electromagnetic spectrum. They're all energy. But these energy waves aren't all the same. Some have more energy than others.



Infrared waves have less energy than visible light waves. Infrared waves are longer with more space between each high and low. Ultraviolet waves have more energy than visible light does. It's this energy that can hurt us.



Feel the Burn

If too much ultraviolet light hits our skin, over time it can hurt our skin cells. The cells can die, and our bodies react. The skin gets red, and it can hurt a lot.

Ultraviolet light comes from the sun, but it can also bounce off of other surfaces like water, snow, and concrete. That means that even if you're under an umbrella, you can still get a sunburn. Ultraviolet light can also go through clouds, so you can get burned on an overcast day. No fair!

You can protect your skin by doing things that keep ultraviolet waves from reaching you. Clothing and hats are a great way to keep away those waves. Sunblock contains chemicals that can reflect or absorb the ultraviolet light, leaving your skin sunburn free.

That way you can enjoy the other energy from the sun, visible light and infrared warmth.



FAAC Schedule of Events 2016				
Month	Event	Date	Start Time	Location
May	Transit of Mercury	Monday 9th	7am	HJRO and Lyon Township
May	Beginner Night	Saturday, 14th	8pm	Island Lake
May	Annual club banquet	Saturday 21st	8pm	Karl's Cabin
June	Beginner night	Saturday 11th	6pm	Island Lake
July	Beginner Night	Saturday 9th	8pm	Island Lake
August	Club Picnic	Saturday 13th	8pm	Island Lake
September	Astronomy At The Beach	Friday 9th, Saturday 10th	5pm	Kensington Metro park
October	Beginner Night	Saturday 8th	8pm	Lake Eire Metro park

Astro Imaging SIG Events

By Gordon Hansen

All are invited to join us in the Astro Imaging SIG meetings, to share and discuss images, experiences, and techniques.

We always have a good time, with lively discussion,

and sharing of valuable information.

Next meeting is **May 12th**. The meeting room location – HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served

FAAC Equipment Holders Report

By Dennis Salliotte

<u>Item</u>	<u>Currently Held By:</u>	<u>Date Last Verified</u>
<u>Telescopes</u>		
4" Dobsonian (Harold's donation)	George Korody	1/7/16
<u>Presentation Tools</u>		
Projector (older)	Jim Frisbie	3/22/16
Projection Screen 8'	Bob MacFarland	1/8/16
Speaker System w/wireless mic	Bob MacFarland	1/8/16
Bullhorn	George Korody	1/7/16
DVD Player	Jim Frisbie	3/22/16
Projection Screen 6'	Mike Dolsen	3/19/16
Projector, ViewSonic	Gordon Hansen	3/3/16

<u>Demonstration Tools</u>		
Weight On Planets Scale	George Korody	1/7/16
Lunar Phase Kit	Bob MacFarland	1/8/16
100 ft Scale Model Solar System Kit	Bob MacFarland	1/8/16
<u>Display Items</u>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	2/16/16
PVC Display Board - Folding	Sandra Macika	1/8/16
Banner – Small (24" X 32")	George Korody	1/7/16
Banner – Medium (24" X 72")	Sandra Macika	1/8/16
Banner – Large (32" X 16')	George Korody	1/8/16
Tri-Fold Presentation Boards	Don Klaser	1/8/16
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/7/16
<u>Other</u>		
Canopy (10' X 10')	Tim Campbell	2/15/16
Equipment Etching Tool	Greg Ozimek	1/10/16
Pop Cooler	Michael Dolsen	3/19/16
<u>EQUIPMENT KITS</u>		<u>CARETAKER</u>
<u>Telescopes</u>		
TK3 Celstrn 130 Newt Goto mount	Liam Finn	2/16/16
TK4 Clstrn 90 Refrctr w/man mount	Liam Finn	2/16/16
TK5 4 ½ " Reflector, on Fitz GEM mount	Bob MacFarland	1/8/16
TK6 8" Orion 8XTi Dobsonian	Jennifer Monske CARETAKERSHIP IS AVAILABLE	4/17/16
TK1 Coronado PST solar scope w/double stack, Meade Autostar Goto mount & tripod and accessories	John McGill	1/9/16
<u>Binoculars</u>		
BK3 15x70 binocs, monopod mount	Bob MacFarland	1/8/16
BK4 20x80 binocs, altaz goto mount	Sandra Macika	1/8/16
BK5 25x70 binocs w/tripod adaptor	Tim Dey	3/21/16
<u>Eyepiece Kit</u>		
EPK1 Eyepieces, filters & accesories	Liam Finn	2/16/16

<u>Other</u>		
TA Sky Quality Meter	Syed Saifullah	1/8/16
TA Sky Atlas 2000.0	Tim Dey	3/21/16
TA Orion telescope binoviewer	Liam Finn	2/16/16
<u>Lincoln Park Observatory</u>		
LPO Celestron binoviewer #93691	Tim Dey	1/16/16
LPO Celestron 2X 1.25" Barlow	Tim Dey	3/21/16
<u>Imaging SIG</u>		
C1 Celestron NexImage Solar System Imager model #93712	Gordon Hansen	2/16/16
C2 Meade Deep Sky Imager PRO III w/AutoStar Suite	Gordon Hansen	2/16/16
C3 Orion StarShoot Deep Space Video Camera NTSC #52185 w/video capture device #52178	Gordon Hansen	2/16/16
C4 Meade Electronic Eyepiece w/cable to a video monitor, VCR or TV. Pairw#43 AND Meade 3.5" LCD Color Monitor Kit # 07700 Complete (unused). Pair w#34	Gordon Hansen	2/16/16
C5 Orion StarShoot Deep Space Video Camera II #52195 AND Orion StarShoot iPhone Control for Deep Space Video Camera II #52195	Gordon Hansen	2/16/16
CA1 Rigel Systems Spectroscope	Gordon Hansen	2/16/16
CA2 Celestron 1.25" to T-Adapter(male thread) Model #93625	Gordon Hansen	2/16/16
CA3 Canon EOS deluxe astrophoto kit FOR Canon bayonet T-thread adapter and variable 1.25" extender	Gordon Hansen	2/16/16
CA4 Orion StarShoot LCD-DVR #58125 2.5" LCD screen	Gordon Hansen	2/16/16
CA5 Celestron Canon EOS T-ring adapter #93419	Gordon Hansen	2/16/16
<u>Special Event Use Only-</u>		

<u>Not Available For Loan Out</u>		
TK2 Meade 8" ETX-LS-ACF w/tripod, voice assist, computerized GPS plus MANY (35+) accessories	Tim Dey	3/21/16
BK1 Orion BT-100 binocular telescope w/hard case, Orion VersaGo h.d. man altaz mount w/Vixen dovetail head and Vixen style binocular holder bracket	Ken Anderson	1/10/16
BK2 Zhumell 25x100 binoculars, hard case & Zhumell TRH-16 tripod w/soft fabric bag	Sandra Macika	1/8/16
TAK1 Night Vision Intensification binocular unit	George Korody	1/7/16
Dennis Salliotte equipment@fordastronomyclub.com		

STAR STUFF

This Newsletter is published eleven times each year by:

FORD AMATEUR ASTRONOMY CLUB P.O. Box 7527 Dearborn MI 48121-7527

PRESIDENT: Tim Campbell

VICE PRESIDENT: Tim Dey

SECRETARY: Jessica Edwards

TREASURER: Gordon Hansen

WEBMASTER: Greg Ozimek

NEWSLETTER EDITOR: Liam Finn

Club Information:

The Ford Amateur Astronomy Club (FAAC) meets on the fourth Thursday each month, except for the combined November/ December meeting on the first Thursday of December - at Henry Ford College Administration Services and Conference Center in Dearborn. Refer to our website for a map and directions. www.fordastronomyclub.com .

The FAAC observes at Spring Mill Pond within the Island Lake State Recreation Area near Brighton, Michigan. The club maintains an after-hours permit, and observes on Friday and Saturday nights, and nights before holidays, weather permitting.

The FAAC also has use a private observing site near Gregory Michigan and Lake Erie Metro Park. See the FAAC Yahoo Group* for more information.

Observing schedules and additional info are available on our website, or via the FAAC Yahoo Group.* Or call

the FAAC Hotline, for info and leave a message, or ask questions: 313-757-2582. You may also send email inquiries to info@fordastronomyclub.com .

Membership in the FAAC is open to anyone with an interest in amateur astronomy. The FAAC is an affiliate of the Ford Employees Recreation Association (F.E.R.A.).

Membership fees:

Annual - New Members: \$30 (\$15 after July 1)

Annual - Renewal: \$25 (\$30 after January 31)

Membership includes the STAR STUFF newsletter, discounts on magazines, discounts at selected area equipment retailers, and after-hours access to the Island Lake observing site.

Astronomy or Sky & Telescope Magazine Discounts Obtain the required form from the FAAC club treasurer for a \$10 discount.

Send the completed form directly to the respective publisher with your subscriptions request and payment. Do not send any money directly to the FAAC for this.

Star Stuff Newsletter Submissions Your submissions to STAR STUFF are welcome! Send your story and/or images to the editor: StarStuff@fordastronomyclub.com Email text or MS Word is fine. STAR STUFF will usually go to press the weekend prior to each general meeting.

Submissions received prior to the 15th can be included in that month's issue.

* FAAC Members are welcome to join our Ford Astronomy Club Yahoo! Group. Messages photos, files, online discussions.

Editors Notes

As most may have noticed, this month's newsletter is in a different format to those of recent years. I'm trying out new designs and layouts. Any members who wish to provide input on the design please feel free to contact me