



Star Stuff

Ford Amateur Astronomy Club Newsletter

Volume 26, Number 8

September 2016

Is there a super-Earth in the Solar System out beyond Neptune?

By Ethan Siegel

There is this great idea that if you look hard enough and long enough at any region of space, your line of sight will eventually run into a luminous object: a star, a galaxy or a cluster of galaxies. In reality, the universe is finite in age, so this isn't quite the case. There are objects that emit light from the past 13.7 billion years—99 percent of the age of the universe—but none before that. Even in theory, there are no stars or galaxies to see beyond that time, as light is limited by the amount of time it has to travel.

But with the advent of large, powerful space telescopes that can collect data for the equivalent of millions of seconds of observing time, in both visible light and infrared wavelengths, we can see nearly to the edge of all that's accessible to us.

The most massive compact, bound structures in the universe are galaxy clusters that are hundreds or even thousands of times the mass of the Milky Way. One of them, Abell S1063, was the target of a recent set of Hubble Space Telescope observations as part of the Frontier Fields program. While the Advanced Camera for Surveys instrument imaged the cluster, another instrument, the Wide Field Camera 3, used an optical trick to image a parallel field, offset by just a few arc minutes. Then the technique was reversed, giving us an unprecedentedly deep view of two closely aligned fields simultaneously, with wavelengths ranging from 435 to 1600 nanometers.

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Presidents Article

By Timothy Campbell

Astronomy at the Beach and the Great American Solar Eclipse

This year didn't offer quite the weekend weather package we all wanted.

Friday night had the cloud cover, but no rain... in spite of this, we still had people out to look through telescopes (at terrestrial objects) and guests visiting the tables, demonstrations, and talks. I was not in the tent but I'm told the talks were heavily attended.

Saturday had afternoon rain, but the skies began to open up by evening — and nearly completely clear for parts of the night. We had significantly more people looking through telescopes, but I think the afternoon rain (and a poor forecast for the early part of the evening) probably discouraged many potential guests. I personally was contacted by a co-worker the following day who had planned to attend, but did not, because the weather forecast predicted cloudy skies.

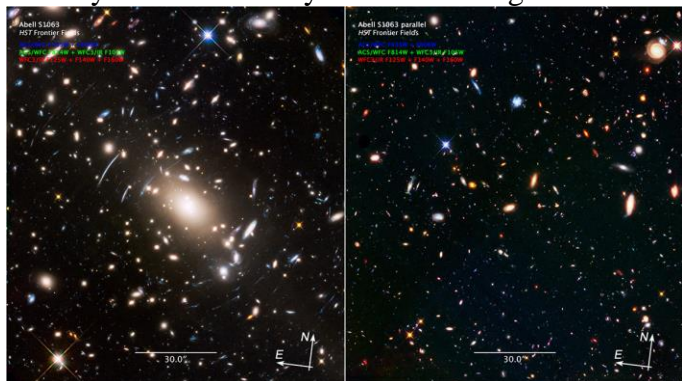
Regarding the weather: I did discover a club member who took delivery on a new 8" Celestron EdgeHD SCT and mount the day before the event. Appropriate disapproving stares have been forwarded in the proper direction on your behalf. The club has rules against buying new equipment in the days leading up to any major event. For your own safety, do NOT buy any equipment in August of 2017. You have been warned.

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With a huge, towering galaxy cluster in one field and no comparably massive objects in the other, the effects of both weak and strong gravitational lensing are readily apparent. The galaxy cluster—over 100 trillion times the mass of our sun—warps the fabric of space. This causes background light to bend around it, converging on our eyes another four billion light years away. From behind the cluster, the light from distant galaxies is stretched, magnified, distorted, and bent into arcs and multiple images: a classic example of strong gravitational lensing. But in a subtler fashion, the less optimally aligned galaxies are distorted as well; they are stretched into elliptical shapes along concentric circles surrounding the cluster.

A visual inspection yields more of these tangential alignments than radial ones in the cluster field, while the parallel field exhibits no such shape distortion. This effect, known as weak gravitational lensing, is a very powerful technique for obtaining galaxy cluster masses independent of any other conditions. In this serendipitous image, both types of lensing can be discerned by the naked eye. When the James Webb Space Telescope launches in 2018, gravitational lensing may well empower us to see all the way back to the very first stars and galaxies.



Galaxy cluster Abell S1063 (left) as imaged with the Hubble Space Telescope as part of the Frontier Fields program. The distorted images of the background galaxies are a consequence of the warped space dues to Einstein's general relativity; the parallel field (right) shows no such effects. Image credit: NASA, ESA and Jennifer Lotz (STScI) the Sun.

Presidents Article

By Timothy Campbell

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I do not yet have the attendance numbers from the park, but I expect they will be lower this year based on the weather.

We did have 28 different club members who volunteered at the event... mostly through helping with tables or by bringing a telescope. Thank you all for your volunteer efforts — you make this possible. There will be a drawing for door-prizes for the volunteers. (Possibly we should confiscate the aforementioned new 8" Celestron EdgeHD SCT and add that to the prize pool.)

I do not have any information on what will happen for next year's event (based on the park rules which impacted this year's event). That will be the decision of GLAAC. I'm sure they are evaluating options.

Many of us did get to attend Fred Espenak's talk to the astronomers on Saturday afternoon. In addition to his expertise on eclipse predictions and paths, he's also an expert on eclipse photography and provided a very nice presentation. At the "public" talks, Fred discourages first-time eclipse attendees from doing astrophotography. The astronomer talk focused on those of us who plan to ignore that advice and do photography anyway (and how to do it right).

For those who could not attend his talk, much of what he discussed is in the book "Lessons from the Masters" subtitled "Current Concepts in Astronomical Image Processing" and is edited by Robert Gendler. I say "edited by" because it turns out each chapter is written by a different author (or at least many of them). Fred Espenak wrote a chapter titled "Imaging and Processing Images of the Solar Corona" and this is largely what his afternoon talk was about. So if you missed the talk, you can buy the book.

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One more thing... if you do plan to photograph the eclipse, and you have a camera that can be remotely controlled via computer, then he suggested a couple of programs for this... Windows users can get a program called “Eclipse Orchestrator” and Mac users can get a program called “Solar Eclipse Maestro”. Both programs generate scripts based on the GPS coordinates of where you are standing along with time & date and amount of eclipse coverage... and this is used to automatically control the cameras, adjust exposures, etc. all throughout the eclipse.

We’ll likely spend at least a small amount of time at each meeting (likely just a few minutes) discussing eclipse plans as the year progresses.

For the Young Astronomers

Why did it take so long to discover Uranus?

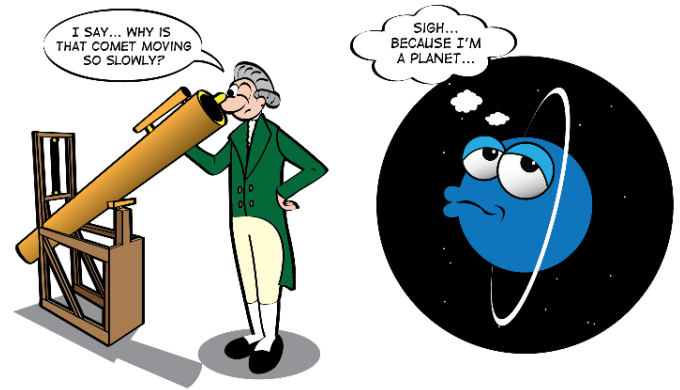
If you know where to look, and your eyes are strong enough, you might be able to see Uranus without a telescope or binoculars. It’s not very bright and barely large enough, but it does sometimes appear in our night sky.

In spite of this, Uranus wasn’t officially discovered until 1781. Ancient Babylonians knew about all of the planets from Mercury to Saturn long before that. Why did it take so long for people to find lonely Uranus?

Actually, it wasn’t a matter of finding it. It was a matter of knowing that it was a planet. The story of Uranus’s discovery is full of people not realizing what they were seeing. People may have seen Uranus as early as 128 B.C. but, each time they saw it, they said it was a star.

In fact, the man who we credit with discovering the planet got it wrong too! Sure, he knew it wasn’t a star. These other astronomers began to study the object too. They figured out that its orbit was pretty close to circular—just like the orbit of a planet. That was enough for most of them to call it a planet. By 1783, Herschel also accepted that it must be a planet. After he tried to name it after King George III, the planet was named Uranus, after the Greek god of the sky.

star, but he didn’t think it was a planet either. On March 13, 1781, William Herschel—an amateur astronomer—located an object in the night sky. After measuring it, he determined that this object moved too quickly to be a star. It had to be a comet, he thought.



Herschel told other astronomers about the new “comet.” They were confused. The problem was that a comet as bright as this object would have to be

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 **September 8th**. The meeting room location – HFC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served

Treasurers Report

September 2016

By Gordon Hansen

4:58 PM
09/13/16
Accrual Basis

Ford Amateur Astronomy Club Balance Sheet

As of September 13, 2016

Sep 13, 16

ASSETS

Current Assets

Checking/Savings

10000 · Checking	\$	104.74
11000 · FAAC Savings		
11100 · FAAC Club Savings	\$	1,599.94
11200 · Equipment	\$	2,261.48
11300 · Scholarship	\$	206.26
Total 11000 · FAAC Savings	\$	4,067.68
12000 · Petty Cash Account	\$	197.99
13000 · CD's		
13100 · CD 200599272	\$	1,064.26
13200 · CD 205196033	\$	1,009.06
13300 · CD 89265268	\$	1,113.18
Total 13000 · CD's	\$	3,186.50
Total Checking/Savings	\$	7,556.91
Total Current Assets	\$	7,556.91
TOTAL ASSETS	\$	7,556.91

FAAC Schedule of Events 2016

Month	Event	Date	Start Time	Location
October	Beginner Night	Saturday 22nd	7pm	Maybury State Park

FAAC Equipment Holders Report

By Dennis Salliotte

FAAC Equipment Report 9/14/16

<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	9/14/16
Speaker System w/wireless mic	Bob MacFarland	9/14/16
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	9/14/16
<u>Demonstration Tools</u>		
Weight On Planets Scale	George Korody	1/7/16
Lunar Phase Kit	Bob MacFarland	9/14/16
100 ft Scale Model Solar System Kit	Bob MacFarland	9/14/16
<u>Display Items</u>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	9/14/16
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	9/14/16
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/7/16

<u>Other</u>		
Canopy (10' X 10')	Tim Campbell	9/14/16
Equipment Etching Tool	Greg Ozimek	1/10/16
Pop Cooler	Michael Dolsen	6/22/16
<u>EQUIPMENT KITS</u>		
<u>CARETAKER</u>		
<u>Telescopes</u>		
TK3 Celstrn 130 Newt Goto mount	Liam Finn	7/20/16
TK4 Clstrn 90 Refrctr w/man mount	Liam Finn	7/20/16
TK5 4 ½ " Reflector, on Fitz GEM mount	Bob MacFarland	9/14/16
TK6 8" Orion 8XTi Dobsonian	Dennis Salliotte CARETAKERSHIP IS AVAILABLE	9/14/16
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	9/14/16
BK4 20x80 binocs, altaz goto mount	Sandra Macika	1/8/16
BK5 25x70 binocs w/tripod adaptor	Tim Dey	9/14/16
<u>Eyepiece Kit</u>		
EPK1 Eyepieces, filters & accessories	Liam Finn	7/20/16
<u>Other</u>		
TA Sky Quality Meter	Syed Saifullah	4/26/16
TA Sky Atlas 2000.0	Tim Dey	9/14/16
TA Orion telescope binoviewer	Liam Finn	7/20/16
<u>Lincoln Park Observatory</u>		
LPO Celestron binoviewer #93691	Tim Dey	9/14/16
LPO Celestron 2X 1.25" Barlow	Tim Dey	9/14/16
<u>Imaging SIG</u>		
C1 Celestron NexImage Solar System Imager model #93712	Gordon Hansen	9/14/16
C2 Meade Deep Sky Imager PRO III w/AutoStar Suite	Gordon Hansen	9/14/16

C3 Orion StarShoot Deep Space Video Camera NTSC #52185 w/video capture device #52178	Gordon Hansen	9/14/16
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	9/14/16
C5 Orion StarShoot Deep Space Video Camera II #52195 AND Orion StarShoot iPhone Control for Deep Space Video Camera II #52195	Gordon Hansen	9/14/16
C6 Canon 60 DA and accessories	Tim Dey	9/14/16
CA2 Celestron 1.25" to T-Adapter(male thread) Model #93625	Gordon Hansen	9/14/16
CA3 Canon EOS deluxe astrophoto kit FOR Canon bayonet T-thread adapter and variable 1.25" extender	Gordon Hansen	9/14/16
CA4 Orion StarShoot LCD-DVR #58125 2.5" LCD screen	Gordon Hansen	9/14/16
CA5 Celestron Canon EOS T-ring adapter #93419	Gordon Hansen	9/14/16
<u>Special Event Use Only- Not Available For Loan Out</u>		
TK2 Meade 8" ETX-LS-ACF w/tripod, voice assist, computerized GPS plus MANY (35+) accessories	Tim Dey	9/14/16
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	7/21/16
BK2 Zhumell 25x100 binoculars, hard case & Zhumell TRH-16 tripod w/soft fabric bag	Sandra Macika	1/8/16
TAK1 Night Vision Intensification	George Korody	1/7/16

binocular unit		
Dennis Salliotte equipment@fordastronomyclub.com		

STAR STUFF

This Newsletter is published eleven times each year by:
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 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

Any members who wish to provide input on the layout and design of the Newsletter please contact me.