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On The Brightness Of Venus

By Ethan Siegel

Throughout the past few months, Venus and Jupiter have been consistently the brightest two objects visible in the night sky (besides the moon) appearing in the west shortly after sunset. Jupiter is the largest and most massive planet in the solar system, yet Venus is the planet that comes closest to our world. On June 30th, Venus and Jupiter made their closest approach to one another as seen from Earth—a conjunction—coming within just 0.4° of one another, making this the closest conjunction of these two worlds in over 2,000 years.

And yet throughout all this time, and especially notable near its closest approach, Venus far outshines Jupiter by 2.7 astronomical magnitudes, or a factor of 12 in apparent brightness. You might initially think that Venus's proximity to Earth would explain this, as a cursory check would seem to show.

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President's Article

By Tim Campbell

New Club Cameras

A few weeks ago, our generous patron, Maria Comninou, contacted us to mention she had a couple of cameras that she wanted to donate. One of them is a Canon EOS Rebel T1i (my first digital SLR camera was a Canon T1i), the other is a Canon EOS 60Da astrophotography camera. Several club members own the 60Da because it was the only DSLR camera specifically for astrophotography (recently Nikon has started offering a model.)

Our human eye is not equally sensitive to all colors. It is most sensitive to greens which are near the center of the visible spectrum (which is why astronomy lasers are green — our eyes easily pick up that color even at low power levels) and not so sensitive to reds and blues near the edges of the spectrum.

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STAR STUFF

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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. or 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 issue.

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

This month's background photos of the moon Page 1 courtesy of John Kirchhoff. See more of John's photos at:

<http://www.flickr.com/photos/33926475@N06/with/4311533997/>

Regular cameras intended for typical terrestrial photography have filters which desensitize the camera so that its sensitivity to each color will roughly approximate the sensitivity of the human eye — and that's why the photos look normal to us.

These filters create a bit of a problem for astrophotography because most of the visible light in the universe is at a frequency that our eyes are not particularly good at seeing. Hydrogen is the most abundant element by far. As hydrogen atoms absorb and re-emit energy, they do so following the Balmer series — in which most of the light is emitted at the Hydrogen alpha (Ha) frequency of about 656nm. This light is visible to us as a bright red color, but our eyes are only moderately sensitive to it. When you walk outside into sunlight, there's about 4-5 times more of that red color than our eyes notice. Camera filters are designed to mimic our eye sensitivity by reducing about 80% of the light at that wavelength.

This means that if you want to do astrophotography, you probably want a camera which is sensitive to the strongest wavelength of light emitted by the most abundant element in the universe. And yet... most color cameras block most of this light.

The color filter on the Canon 60Da (the "a" stands for "astrophotography" edition) is different in that it allows nearly all of that light to pass uninhibited. The camera otherwise works like a typical Canon DSLR camera and it even uses the same lenses.

George Korody is in possession of the camera and I think both cameras will be available for borrowing in the near future.

These cameras can be attached to almost any refractor or catadioptric telescope (any telescope that uses a 90° diagonal mirror can also accept a DSLR for imaging.) Newtonian reflectors (including Dobsonian mounted reflectors) might be problematic because they are designed to focus with an eyepiece without using a diagonal. This matters because the camera adds nearly 2" to the focal length of a telescope and yet the diagonal mirror occupies about 2" of the focal length.

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Image credit: E. Siegel, using the free software Stellarium (L); Wikimedia Commons user TimothyBoocock, under a c.c.-share alike 3.0 license (R). The June 30th conjunction (L) saw Venus and Jupiter pass within 0.4° of one another; yet Venus always appears much brighter (R), as it did in this image from an earlier conjunction.

On The Brightness Of Venus

(continued from Page 1)

On June 30th Venus was 0.5 astronomical units (AU) away from Earth, while Jupiter was six AU away. This appears to be exactly the factor of 12 that you need.

Only this doesn't explain things at all! Brightness falls off as the inverse square of the distance, meaning that if all things were equal, Venus ought to seem not 12 but 144 times brighter than Jupiter. There are three factors in play that set things back on the right path: size, albedo, and illumination. Jupiter is 11.6 times the diameter of Venus, meaning that despite the great difference in distance, the two worlds spanned almost exactly the same angular diameter in the sky on the date of the conjunction. Moreover, while Venus is covered in thick, sulfuric acid clouds, Jupiter is a reflective, cloudy world, too. All told, Venus possesses only a somewhat greater visual geometric albedo (or amount of reflected visible light) than Jupiter: 67 percent and 52 percent, respectively. Finally, while Venus and Jupiter both reflect sunlight toward Earth, Jupiter is always in the full (or almost full) phase, while Venus (on June 30th) appeared as a thick crescent.

All told, it's a combination of these four factors—distance, size, albedo, and the phase-determined illuminated area—that determine how bright a planet appears to us, and all four need to be taken into account to explain our observations.

Don't fret if you missed the Venus-Jupiter conjunction; three more big, bright, close ones are coming up later this year in the eastern pre-dawn sky: Mars-Jupiter on October 17, Venus-Jupiter on October 26, and Venus-Mars on November 3.

Keep watching the skies, and enjoy the spectacular dance of the planets!

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Treasurer's Report

July 14, 2015

By Gordon Hansen

Jul 14, 15

ASSETS

Current Assets

Checking/Savings

	\$
10000 · Checking	421.02
11000 · FAAC Savings	
11100 · FAAC Club Savings	\$ 1,896.08
	\$
11200 · Equipment	2,030.70
	\$
11300 · Scholarship	193.26
	\$
11400 · GLAAC	6,166.18
	\$
Total 11000 · FAAC Savings	10,286.22
	\$
12000 · Petty Cash Account	34.83
13000 · CD's	
	\$
13100 · CD 200599272	1,062.14
	\$
13200 · CD 205196033	1,006.82
	\$
13300 · CD 89265268	1,110.42
	\$
Total 13000 · CD's	3,179.38
	\$
Total Checking/Savings	13,921.45
	\$
Total Current Assets	13,921.45
	\$
TOTAL ASSETS	13,921.45

Meeting Agenda - July 23rd

HFC – Berry Auditorium -Admin. Services & Conference Center www.fordastronomyclub.com
5:30

Opening/Introduction/Member Observing

Main Presentation:

Tech Talk:

Club Projects/Committees/Member Support

Club Business/Secretary/Treasurer/Equipment Reports

President's Article

(continued from Page 2)

When you remove the diagonal and attach the camera where the diagonal used to be... the focal length is what the telescope expects, the images focus, and everybody is happy. If you do this with a Newtonian reflector, there's no diagonal to remove... now you've added 2" to the focal length of the telescope and have no easy way to compensate. Many Newtonian reflectors are unable to bring an image to focus on a typical DSLR camera because of that 2" difference.

Other Club Equipment

This brings me to my next topic. Maria has donated a substantial amount of equipment including telescopes, binoculars, cameras, and more. Only a few of the items are designated as "special event" gear due to their technical nature and/or fragility (the night-vision device is easily destroyed by being exposed to too much light — and it doesn't take much.)

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Astro Imaging SIG

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 **August 13th**. The meeting room location – HFCC Admin. Services and Conference Center (same building), Berry Amphitheater Auditorium.

Topics invited. Pizza served.

FAAC Events 2015

August 22nd - FAAC Annual Picnic 5pm

August 22nd - Beginner's Night at Island Lake

Background Photo from Lunt Solar Scope Image taken at the Hector J Robinson Observatory, June 28, 2010

One FAAC members blog

<http://hjrobservatory.blogspot.com/>

A few updates on the observatory, quick articles and photos. I'll try to improve my writing on this blog. Also, I try to keep daily updates on this blog. - Greg Knekleian, HJRO volunteer.

President's Article

(continued from Page 4)

This list of equipment is published each month and maintained by Dennis Salliotte; the club equipment manager. Dennis maintains the the inventory but in most cases he is not the keeper of the gear. To borrow gear, consult the inventory list and contact the custodian. If you are unable to contact the custodian Dennis can usually help.

The club's Coronado PST (Ha solar telescope) is now in the normal loaner pool and be be borrowed by club members (it was previously "special event" gear.)

You need not be an expert on the equipment to borrow it. The gear in the general loaner pool is intended to be easy enough for beginner or intermediate use. When arranging a pickup location and time, arrange enough time for an orientation into it's proper use (in most cases that will probably take less than 10 minutes.)

FAAC Equip Report 7/7/15

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	1/22/15
<u>Presentation Tools</u>		
Projector (older)	Jim Frisbie	6/30/15
Projection Screen 8'	Bob MacFarland	5/13/15
Speaker System w/wireless mic	Bob MacFarland	5/13/15
Bullhorn	George Korody	1/22/15
DVD Player	Jim Frisbie	1/6/15
Projection Screen 6'	Mike Dolsen	4/23/15
Projector, ViewSonic	Gordon Hansen	5/13/15
<u>Demonstration Tools</u>		
Weight On Planets Scale	George Korody	1/22/15
Lunar Phase Kit	Bob MacFarland	5/13/15
100 ft Scale Model Solar System Kit	Bob MacFarland	5/13/15
<u>Display Items</u>		
Astronomy Event Sign (3' X 6')	Gordon Hansen	5/13/15
PVC Display Board - Folding	Sandra Macika	7/6/15
Banner – Small (24" X 32")	George Korody	1/22/15
Banner – Medium (24" X 72")	Sandra Macika	4/30/15
Banner – Large (32" X 16')	Dennis Salliotte	7/7/15
Tri-Fold Presentation Boards	Don Klaser	1/22/15
Tri-Fold Poster Board (Early Club Photos)	George Korody	1/22/15
<u>Other</u>		
Canopy (10' X 10')	Tim Campbell	4/2/15
Equipment Etching Tool	Greg Ozimek	4/2/15
Pop Cooler	Michael Dolsen	4/23/15
<u>EQUIPMENT KITS</u>		
<u>Telescopes</u>		
TK3 Celstrn 130 Newt Goto mount	Liam Finn	2/13/15
TK4 Clstrn 90 Refrctr w/man mount	Liam Finn	2/13/15
TK5 4 1/2 " Reflector, on Fitz GEM mount	George Korody	1/22/15
TK6 8" Orion 8XTi Dobsonian	Patrick Lawton	2/13/15
TK1 Coronado PST solar scope w/double stack, Meade Autostar Goto mount & tripod and accessories	John McGill	1/22/15
<u>Binoculars</u>		
BK3 15x70 binocs, monopod mount	Bob MacFarland	5/13/15
BK4 20x80 binocs,altaz goto mount	Sandra Macika	2/5/15
BK5 25x70 binocs w/tripod adaptor	Tim Dey	2/13/15

FAAC Equip Report 7/7/15

By Dennis Salliotte

<u>Eyepiece Kit</u>		
EPK1 Eyepieces, filters & accesories	Liam Finn	2/13/15
<u>Other</u>		
TA Sky Quality Meter	Syed Saifullah	6/22/15
TA Sky Atlas 2000.0	Tim Dey	2/13/15
TA Orion telescope binoviewer	Liam Finn	2/13/15
<u>Lincoln Park Observatory</u>		
LPO Celestron binoviewer #93691	Tim Dey	3/16/15
LPO Celestron 2X 1.25" Barlow	Tim Dey	3/16/15
<u>Imaging SIG</u>		
C1 Celestron NexImage Solar System Imager model #93712	Gordon Hansen	5/13/15
C2 Meade Deep Sky Imager PRO III w/AutoStar Suite	Gordon Hansen	5/13/15
C3 Orion StarShoot Deep Space Video Camera NTSC #52185 w/video capture device #52178	Gordon Hansen	3/16/15
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	5/13/15
C5 Orion StarShoot Deep Space Video Camera II #52195 AND Orion StarShoot iPhone Control for Deep Space Video Camera II #52195	Gordon Hansen	5/13/15
CA1 Rigel Systems Spectroscope	Gordon Hansen	5/13/15
CA2 Celestron 1.25" to T-Adapter(male thread) Model #93625	Gordon Hansen	5/13/15
CA3 Canon EOS deluxe astrophoto kit FOR Canon bayonet T-thread adapter ans variable 1.25" extender	Gordon Hansen	5/13/15
CA4 Orion StarShoot LCD-DVR #58125 2.5" LCD screen	Gordon Hansen	5/13/15
CA5 Celestron Canon EOS T-ring adapter #93419	Gordon Hansen	5/13/15
<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	2/13/15
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	5/15/15
BK2 Zhumell 25x100 binoculars, hard case & Zhumell TRH-16 tripod w/soft fabric bag	Sandra Macika	2/5/15
TAK1 Night Vision Intensification binocular unit	George Korody	1/22/15
Dennis Salliotte equipment@fordastronomyclub.com		

Third Annual FAAC Multi-Club Picnic

Saturday August 22nd, 2015



5pm-Midnight

Island Lake Recreation Area – Spring Mill Pond



State Park Pass Required.
You may purchase a day
pass at the gate if you do not
have one.

Image above: Suat Eman / FreeDigitalPhotos.net

Members of the
following
Astronomy Clubs
and their families:

All Ford

Ford Amateur
Astronomy Club

University Lowbrows

Oakland Astronomy
Club

Seven Ponds
Astronomy Club

Warren Astronomical
Society

SEMSA Soaring Club

Henry Ford College
Astronomy club

Bring your
scope or
binoculars



Image above: Jennifer Zdanowski

FAAC will provide hamburgers, hot dogs,
veggie burgers, soft drinks, plates & utensils

Please bring a dish to pass
salads, snacks, fruit, desserts.....

Ford Amateur Astronomy Club
Star Stuff Newsletter
P.O. Box 7527
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