The Fremont Peak Observer
Bringing Astronomy to the Public

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Renew now for 2018. Don't let your membership expire.

President's Message

By Patrick Donnelly

As I write this article it is evening twilight. The two (2) day old moon is low in the west northwest sky, and brilliant Venus is a few degrees to the moon's right. Twilight time has always been a very peaceful and colorful time for me. Now is a good time to do some evening twilight observing. During the next 6-7 months the moon will pass by Venus early in the evening. Mercury will appear in June and September, and Jupiter will approach Venus in early October. You should consider doing some twilight observing this year, while you wait for the sky to darken.

The public programs for 2018 have begun, I think. Both of the scheduled solar programs were clouded out. Moreover, even if it was clear for these programs, there was little or no activity (e.g. sunspots) to observe. Thus, one did not miss much. We did get to show the public the stars for two (2) of our first three (3) evening programs. Several of the Hartnell astronomy students were treated to a view of Sirius "b" on April 14, and all of the public attendees watched the space station (ISS) sail across the sky. So far this year FPOA is doing well.

Please mark September 8 on your calendar. That day is the Annual Members Meeting of the FPOA. We will have the usual BBQ, raffle, and a talk by a professional astronomer. This year our speaker will be Dr. Raja GuhaThakurta from UC Santa Cruz. He will give a talk on Galaxies, Dark Matter, Cannibalism, Gravitational Waves, and Black Holes . He will also be describing his educational initiative to get more students interested in the STEM (Science, Technical, Engineering, & Math) subjects. As soon as the exact title of the talk is known, it will be posted on the FPOA webpage. If you plan to attend please RSVP by E-mail or leave a message on the observatory answering machine.

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2018
FPOA Program Dates

Saturday Evening Programs

Apr 7, 14, 21 May 5, 12, 19
Jun 9, 16, 23 Jul 7, 14, 21
Aug 4, 11, 18 Sept 1, 8, 15
Oct 6, 13

Solar Programs

Mar 24 Apr 7 May 5 Jun 9
Jul 7 Aug 4 Sept 1 Oct 6

Board Meetings

Jan 13 Feb 17 Mar 24 Apr 14
May 12 Jun 16 Jul 14 Aug 11
Sept 8 Oct 6 Nov 10

Special Events

Annual Meeting / BBQ Sept 8

Please check http://www.fpoa.net/schedule.html for changes or updates to this schedule.

Revised Definition of a Planet

By Patrick Donnelly

Recently a revised definition of "planet" was proposed by Runyon and Smoot. This new definition attempts to eliminate the ambiguity associated with the definition established in 2006 by the International Astronomical Association (IAU). The new definition is as follows: "Planet – A substellar mass (< 10 Jupiter masses) body that has never undergone nuclear fusion within the body and has enough gravitation to

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Definition of a Planet *from Page 1*

to be round (approximately spherical) due to hydrostatic equilibrium, regardless of its orbital parameters.

As described by Runyon and Smoot the new definition is based upon the reality of objects in our solar system, and it attempts to provide a more encompassing definition, which is applicable to all encountered cases. Along with the general definition of a planet the new definition identifies four (4) subcategories of planets. These include:

- Terrestrials
- Gas Giants
- Dwarfs
- Satellites

The Terrestrial Planets would include the rocky bodies found primarily in the inner solar system (e. g. Earth or Venus). The Gas Giants would include large almost all gas bodies like Jupiter or Neptune. The Dwarf Planets would constitute those small rocky and icy bodies found primarily at the outer regions of the solar system (e. g. Pluto, Eris, Charon, or Ceres). Finally, the Satellites would be those objects meeting the definition of planet but do not orbit the central star of the system. Examples here would include Ganymede, Titan, or the Earth's satellite (Selene). In addition, "Moons" would be those objects in orbit around one of the first three (3) types of planets that do not meet the definition of planet. There is one other definition to be included in the overall definition. The term "Double Planet" would be applied to two (2) planetary bodies in orbit around each other, where the center of mass of the two (2) bodies is outside of either body. Thus, Pluto and Charon would constitute a Double Planet. The terms of asteroids, comets, meteors, dust, and gas would remain the same.

Although the new definition and categorization would eliminate many problems, here are some new problems with this system:

- If Ceres and other asteroid belt objects, redefined as planets, do not contain large amounts of water (H_2O), are they Dwarf Planets or small Terrestrial Planets?

- It is possible that interstellar planets (planets not in orbit around any star or other planet) exist. What category would they be placed?

- If Planet X is found in the middle of the Kuiper Belt, and the object is larger than say Mars, what category does it belong? Also, what classification does it receive, if it is not spherical?

As one can see nothing is perfect. However, imperfect as it is, this system is much better than the definition given in 2006, and this new definition has not been generated by a vote.

Observer Distribution News

By Rob Hawley

The Observer will now be primarily an electronic distribution. In the last 5 years we have been trying to get members to adopt the electronic version of the Observer. There are advantages of this for both you as a member and for the organization. For you the member you will get our photographs and illustrations in color instead of the poorly reproduced B&W from the photocopiers. FPOA will save money on the distribution and it will save wear and tear on the volunteers who put the editions out. Thus from this point forward electronic copies will no longer be offered to annual members without board approval. Life members currently receiving the observer will get a return card in their next edition that must be returned for paper observers to continue. Annual members and Observer whose subscription is expiring **will** receive a paper copy in December as that tends to prompt renewals.
If there are any questions please contact Rob at treasurer@fpoa.net.

NEAF 2018

By Rob Hawley

NEAF (pronounce it like "Knee•ph" or you will get corrected) is the annual weekend pro/am astronomy conference held outside of New York City each April. The conference is in Suffern which is about an hour north of New York on the west side of the Hudson. But you do not have to deal with New York itself. You either fly into Westchester County as I did last year or Newark as I did this year. The difference is whether you want less hassle driving or flying.

I attended for the first time last year. Needless to say, last year many of the two days of presentations focused on the upcoming eclipse. There were some other interesting lectures, all from the principle scientists, concerning New Horizons, DragonFly (a "telescope" made by combining many commercial telephoto lenses into a large, very fast instrument), Orbital Atlas V rockets that deliver goods to the space station

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NEAF 2018 *from Page 2*

(in competition with Space X), Exoplanets, imaging the moon using video cameras and the ULA Atlas V rocket.

The trip is not inexpensive when you add up the costs, but I decided to give it another go this year. I also added the NEAIC which is a two-day imaging conference that is held before NEAF.

Part of the attraction is the well-equipped "toy store" at each conference. Vendors from across the industry (including almost all that I have helped support) have booths set up at one or both conferences. This gives you the ability to directly talk with the engineers involved with the development ("why does X work like "Y"). I find such face to face encounters much more useful than a simple email exchange.

NEAIC talks mostly concentrated on imaging. One of FPOA's long time astrophotographers Richard Crisp gave three talks including a marathon evening session where we explored the math behind image calibration and what can do wrong. Another speaker was Rachel Freed from Ferguson Observatory in the North Bay. Other notables were a discussion on CMOS sensors and why they are likely to replace the current CCD technology (and is this good?), Suggestions for improving tracking, and using the Raspberry Pi micro computer to build peripherals (I am soon to have one on order for a project I have).

The first day of the 2018 NEAF talks included

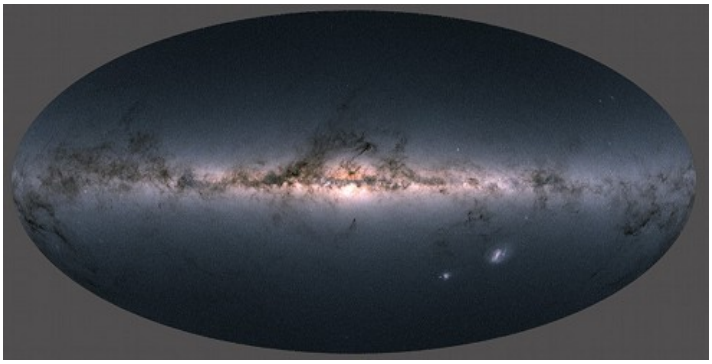
- Don Bruns on repeating (and completion) of the 1919 effort to prove General Relativity during the Solar Eclipse. It turns out the 1919 effort was flawed with large error bars (despite all the notoriety it brought Albert Einstein). Attempts in the succeeding eclipses for almost 100 years all failed. 2017 was the first time measurements were accurate to within 3%. Since the gravity based deflections are tiny it was interesting to hear how this was achieved.
- A brief summary on a number of Lockheed missions.
- The Boeing CST-100 Starliner Crew Capsule
- The final talk was "Bring Columbia Home". This was given by the mission director who led the recovery effort after the crash. It was a moving talk, but very draining.

Second day featured talks on the Webb Space Telescope, the new GOES Weather Satellite, and finally the Space X Falcon Heavy.

My wallet was a lot lighter after the conference purchasing a new portable mount for eclipse chasing and an All Sky Camera that I will use for measuring transparency at my observatory. The final item is a camera that we will be trying on the H alpha scope. They had one set up outside the NEAF building. My opinion was that it made seeing the prominences much easier (Unless you were using a 6" refractor like they were using). We will see if that proves to be better than our bino viewer or if the bino viewer that we started using this year is better.

So I got a lot of info from the 4 days. I have a long checklist of stuff to do on my own observatory, some thought provoking information on astronomy, and some new stuff. Will I go again? Ask me next April.

Gaia Second Data Set by Rob Hawley



http://sci.esa.int/gaia/60169-gaia-s-sky-in-colour/

This is a ***simulation*** derived from the Gaia Satellite dataset. Each of the stars is ***plotted*** from the database.

2018 Membership Renewal

You can use the forms on the membership page http://www.fpoa.net/membership.html to pay with either PayPal or via a credit card. For those preferring paper you can just send a check (that has your current correct address) to : FPOA Membership, c/o Rob Hawley, 1233 Hillcrest Dr., San Jose CA 95120

President 's Message *From Page 1*

Once again I want to thank all those individuals, who helped make the West Deck construction project a huge success.

The FPOA is now in discussion with the California Department of Parks and Recreation for a new contract. We shall provide more information on the contract status and the terms contained therein, when it is known.

Please read the article by Rob Hawley (in this newsletter) on the distribution of the FPOA newsletter. We wish to know how you want to receive your copy of the newsletter. If you wish to change the method that you receive the newsletter, please let Rob Hawley know.

Finally, FPOA members have been offered a discount on equipment from OPTCORP (www.OPTCORP.com) . OPTCORP will give a $20 discount to online orders over $250. Please use the discount code "OPTEAM-JL to receive the discount and include the name "JASON LEON" for expedited orders. You can also contact OPTCORP at 1-442-777-5835.

Accessing Members Only Page

Several years ago our member's only information used to be accessed with the URL http://members.fpoa.net. Due to some technical problems with the host we moved to several years ago we have never been able to get that to work.

Members information can now be accessed at https://fpoa.net/members.html. **The https is required!**

FPOA on the Internet

Phone Number:	831-623-2465
Email Address:	info at fpoa.net
Website:	www.fpoa.net
Members Only Page:	https://fpoa.net/members.html
Facebook:	www.facebook.com/fpoa.observatory/
Twitter:	twitter.com/fpoa_info.

EMAIL DELIVERY OF THE OBSERVER

Dear FPOA Members,

The Observer is now only delivered electronically. New editions are posted on our website. If you would like to be notified when a new edition is available please be sure we have your current email address. Since most annual memberships are now renewed via PayPal we will use that address by default. If you would like us to notify you at a different address or your email changes then please send your new email address to membership at fpoa.net

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The *Fremont Peak Observer* is published four times a year (Winter, Spring, Summer, Fall). Articles from members are encouraged and should be emailed to <schedule at fpoa.net > Articles should be in plain text or MS Word format. Deadlines are Feb. 1, May 1, Aug. 1 and Nov 1, respectively.