The Astronews

HUI KILOLANI

Volume 64, Issue 3

March 2015

www.hawastsoc.org

## Flash Star Parties: Semi-unplanned Star Parties with Celly

This months meeting will have a presentation by Ort Vanapruks. He will be talking about a website https://cel.ly/ .

Ort will be going into some of the details as well as fielding questions from the audience. A thumbnail sketch is that it is possible for subgroups of club members who have a special interest such as a particular meteor shower , comets, or any event that may be of interest to a few members who would like to be able to get together on very short notice (because of good viewing conditions) can appoint one of the members of that group to send out s text messsge to sll members of the group to get together st s given time and place. This is a very useful leveraging of already existing technology (almost everyone has a cell phone capable of receiving (and sending) text messages).

You may be thinking that you could put this resource to use for other reasons. It is free and that option is definitely open.

## Inside this issue:



### Upcoming Events:

- The next meeting is on Tuesday, Mar. 3rd at the Bishop Museum 7:30 PM.
- Bishop Museum's planetarium shows are every Saturday of the month at 8:00 PM www.bishopmuseum.org/calendar
- The next Board meeting is Sun., Mar 1 at 3:30 PM in POST building at UH.

# President's Message
# March 2015

First encounters by spacecraft with solar system objects have come a long way since the space age began. Even though we can see quite a bit of detail on Earth's Moon from our planet's surface, it took many attempts before we could even impact the Moon or send back any useful pictures.

Mariner 4 flew past Mars in 1965 and transmitted 22 images to Earth. These covered about 1% of the planet. Unfortunately, the imaged terrain was rather lunar-like and didn't include any of the most exciting things like giant volcanoes and impact basins or Valles Marineris, named after the Mars orbiter Mariner 9. Flyby missions Mariners 6 and 7 had also missed the great canyon and volcanoes while imaging about 20% of Mars.

In today's world we expect much more from initial reconnaissance missions. It used to be necessary to have at least one mission fly by a new object without going into orbit around it. Conventional chemical propulsion rockets expend a lot of energy in a short time and must know the gravity field of the target well in order to change velocity enough to be captured but not so much as to crash land. The Dawn mission, however, uses an ion thruster that exerts little force but can be used continuously for long periods. This allowed Dawn to approach Vesta slowly, gradually entering deeper into its gravitational influence and adjusting its thrust as necessary to achieve orbit. It will do the same at Ceres.

As we did at Vesta, we will see Ceres coming into focus as the days go by. There is time to speculate about the nature of features that become apparent but temporarily vague. I'm guessing that the

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# Observer's Notebook—March 2015 by Jay Wrathall

## Planets Close To the Moon
**Times are Hawaii Standard Time**

Mar 2, 19h, M 5.3 SSW of Jupiter (152° from sun in evening sky)
Mar 11, 21h, M 2.4° NNW of Saturn (106° from sun in morning sky)
Mar 18, 14h, M 3.5° NNW of Neptune (20° from sun in morning sky)
Mar 18, 16h, M 4.9° NNW of Mercury (19° from sun in morning sky)
Mar 21, 01h, M 0.15° WNW of Uranus (15° from sun in evening sky)
Mar 21, 12h, M 0.93° SSE of Mars (22° from sun in evening sky)
Mar 22, 11h, M 2.8° SSE of Venus (34° from sun in evening sky)
Mar 29, 22h, M 5.4° SSW of Jupiter (123° from sun in evening sky.)

## Other Events of Interest
**Times are Hawaii Standard Time**

Mar 4, 10h, Venus 0.09° NNE of Uranus (31° from sun in morning sky) (Closest planet/planet conj. of the year)
Mar 5, 08:05h, Full Moon
Mar 8, Standard time to DST on Mainland
Mar 11, 07h, Mars 0.27° NNW of Uranus (24° from sun in evening sky)
Mar 19, 23:38h, New Moon
Mar 20, 12:45 Spring or Vernal Equinox

## Planets in October

### Mercury
☿ can be viewed in the dawn twilight during the first half of March.

### Venus
♀ shines brightly in the evening - about magnitude -4.0.

### Mars
♂ is visible low in the SW evening sky , Very close to close to Uranus on Mar 11.

### Jupiter
♃ shines brightly high in the evening sky. Reached opposition last month.

### Saturn
♄ is visible in the southeastern sky before sunrise.

### Uranus
♅ is mostly lost in the glare of the sun in March. Reaches opposition next month.

### Neptune
♆ very low in the western twilight before sunrise.

### Pluto (Dwarf Planet)
♇ is visible in the east before dawn. Will be better placed for viewing later in the year.

### 3-Juno (Asteroid)
 reached opposition on Jan 30 at magnitude +8.1.

# Meeting Minutes

H.A.S. Secretary

President Chris Peterson called the February 3, 2015 meeting of the Hawaiian Astronomical Society to order at 7:35 p.m. The meeting was held in Planetarium, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were thirty-three members and five visitors in attendance.

In the News – Chris presented a series of images of Ceres. The Dawn Mission images showed the best images yet released. These amazingly clear pictures showed tantalizing images of the dwarf planet and included images of an interesting white crater.

The Rosette mission targeted the object 67P. The European Space Agency craft is looking for the lander which landed on the surface, but bounced.

NASA's Pacific Regional Planetary Data Center says Good-bye – Chris Peterson informed club members of the passing of the founding Director of the NASA's Pacific Regional Planetary Data Center on the campus of the University of Hawaii. Dr. B. Ray Hawke passed away Saturday, January 24th, at Straub Hospital, after a short illness.

Star Party Report – John Gallagher reported on the January star parties. Our club astronomers shared the night skies with the students, parents and teachers of Waialua Middle School. Although the evening was a bit cloudy, the group was able to see the available planets and do some star watching. John also requested that more people come to help out at the upcoming events for February. John made a plea to members to become more involved with the outreach of the club. Members do not necessarily need to be astronomers. Members can come along and act as helpers, to point out objects in the sky.

Visitors - We had five visitors to the meeting this month. Darrel, Jimbo, Laura, Adrienne and Gregg are all enthusiastic individuals eager to partake of the night sky. Welcome.

Light Problems – Recently it has been announced that a new development is being proposed on the grounds of the Dillingham Ranch, Mokuleia. Chris Peterson wrote a personal letter to the land use commission stating what he sees as a problem for the community which liked the more country feel and less lighting.

The Star Light Reserve Committee is asking for an extension. It is still seeking shielding of street and highway lighting. Visitor Darrel suggested bioluminescent road paving.

State Science Fair, 2015 – The Hawaii State Science and Engineering

*(Continued on page 6)*

# MARCH

SUNDAY

CALENDAR YEAR / MONTH: Mar-15 — FIRST DAY OF WEEK

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|
| 01<br>sunset: 15:50 | 02 | 03<br>7:30 PM Club Meeting | 04 | 05 | 06<br>7:30 PM Space Night(Private) | 07 |
| 08<br>sunset: 15:56 | 09 | 10 | 11<br>8:00 PM Globe at Night | 12<br>8:00 PM Globe at Night | 13<br>8:00 PM Globe at Night | 14<br>8:00 PM Globe at Night 6:30 PM Club Star Party(D)(Private) |
| 15<br>8:00 PM Globe at sunset: 16:01 | 16<br>8:00 PM Globe at Night | 17<br>8:00 PM Globe at Night | 18<br>8:00 PM Globe at Night | 19<br>8:00 PM Globe at Night | 20<br>8:00 PM Globe at Night | 21<br>6:30 PM Public Star Party(D) |
| 22<br>sunset: 16:06 | 23 | 24 | 25<br>7:00 PM Waimalu Elem Star Party (Private) | 26 | 27<br>7:15 PM Star Gazing Night (Private) | 28<br>6:30 PM Public Star Party(G)<br>6:30 PM Public Star Party(K) |
| 29<br>sunset: 16:12 | 30 | 31 | 01 | 02 | 03 | 04 |

## < < Upcoming Star Parties> >

**Public Party-Dillingham Mar. 21**
**Public Party Geiger Mar. 28**
**Public Party Kahala Mar. 28**

Upcoming School Star Parties

| | | |
|---|---|---|
| Fri | Mar 6, 2015 | Iolani Elementary School (McCully Area) |
| Wed | Mar 25, 2015 | Waimalu Elementary School (Aiea Area) |
| Fri | Mar 27, 2015 | Webling Elementary School (Aiea Area) |

***President's Report*** *(Continued from page 2)*
bright white spot will turn out to be a large and relatively recent crater, but the evidence for or against any such hypothesis will build rapidly. Eventually, we should get a global view of Ceres that turns it from a mystery into another rather well-characterized world in our solar system.

The New Horizons mission will fly by the Pluto system without stopping, but it will still provide a wealth of detail that could only have been dreamed about during early planetary flybys. It will give us the best information we'll have for decades, just as the Voyager 2 data at Uranus and Neptune from the 1980s is still the best we have.

**Chris Peterson**

*(Continued from page 4)* *Meeting Minutes*
Fair, 2015 takes place March 22 through March 24. The club with be sending two judges to be agency judges.

Lunar Eclipse – There will be a lunar eclipse visible in Hawaii April 3 -4. There will be a very short 6 minutes of totality between 1:58 am to 2:06 am April 4th. The Bishop Museum will have viewing on the lawn from 10:00 pm, April 3rd to 4:00 am, April 4th. Peter Besenbruch, Chris Peterson, and Gretchen West volunteered to have their scopes on site for the event. Any other astronomers interested please contact Gretchen West. There will be additional viewing out in west Oahu, at Moana Farms. Ort and Tom will be setting up on the property off Waianae Valley Road.

Guest Speaker: This month we had a visit from the Institute For Astronomy, Manoa, Astronomer **Roberto H. Méndez** PhD. Dr. Mendez comes to the Manoa campus from the University of La Plata, Argentina. Dr. Mendez's area of study is in Planetary nebulae in our Galaxy and others.

Dr. Mendez spoke at length about the lack of safety here on Earth from impacts from objects from space. His talk "Beyond the Earth – Strategy for Long Term Human Survival" was interesting and a bit unnerving. He spoke of the evolution of natural selection and how extinction events are defining moments for evolution. He continued on to discuss why we need to develop technology to help us prepare for events that may/will change life on Earth in the future. Dr. Mendez wrapped up his talk suggesting that mankind needs to start preparations now, to develop technologies to help us find a new home in space when impending disaster strikes.

Joanne was gracious enough to show us the night skies in January and February 2015. Lovely as always.

Mahalo – As there was no further business, the meeting was adjourned at 9:44 p.m.

. *Gretchen West*

*H.A.S. Secretary*

As crazy as it once seemed, we once assumed that the Earth was the largest thing in all the universe. 2,500 years ago, the Greek philosopher Anaxagoras was ridiculed for suggesting that the Sun might be even larger than the Peloponnesus peninsula, about 16% of modern-day Greece. Today, we know that planets are dwarfed by stars, which themselves are bound together by the billions or even trillions into galaxies.

But gravitationally bound structures extend far beyond galaxies, which themselves can bind together into massive clusters across the cosmos. While dark energy may be driving most galaxy clusters apart from one another, preventing our local group from falling into the Virgo Cluster, for example, on occasion, huge galaxy clusters can merge, forming the largest gravitationally bound structures in the universe.

Take the "El Gordo" galaxy cluster, catalogued as ACT-CL J0102-4915. It's the largest known galaxy cluster in the distant universe. A galaxy like the Milky Way might contain a few hundred billion stars and up to just over a trillion ($10^{12}$) solar masses worth of matter, the El Gordo cluster has an estimated mass of $3 \times 10^{15}$ solar masses, or 3,000 times as much as our own galaxy! The way we've figured this out is fascinating. By seeing how the shapes of background galaxies are distorted into more elliptical-than-average shapes along a particular set of axes, we can reconstruct how much mass is present in the cluster: a phenomenon known as weak gravitational lensing.

That reconstruction is shown in blue, but doesn't match up with where the X-rays are, which are shown in pink! This is because, when galaxy clusters collide, the neutral gas inside heats up to emit X-rays, but the individual galaxies (mostly) and dark matter (completely) pass through one another, resulting in a displacement of the cluster's mass from its center. This has been observed before in objects like the Bullet Cluster, but El Gordo is much younger and farther away. At 10 billion light-years distant, the light reaching us now was emitted more than 7 billion years ago, when the universe was less than half its present age.

It's a good thing, too, because about 6 billion years ago, the universe began accelerating, meaning that El Gordo just might be the largest cosmic heavyweight of all. There's still more universe left to explore, but for right now, this is the heavyweight champion of the distant universe!

*Learn more about "El Gordo" here: http://www.nasa.gov/press/2014/april/nasa-hubble-team-finds-monster-el-gordo-galaxy-cluster-bigger-than-thought/*

*El Gordo is certainly huge, but what about really tiny galaxies? Kids can learn about satellite galaxies at NASA's Space Place http://spaceplace.nasa.gov/satellite-galaxies/.*

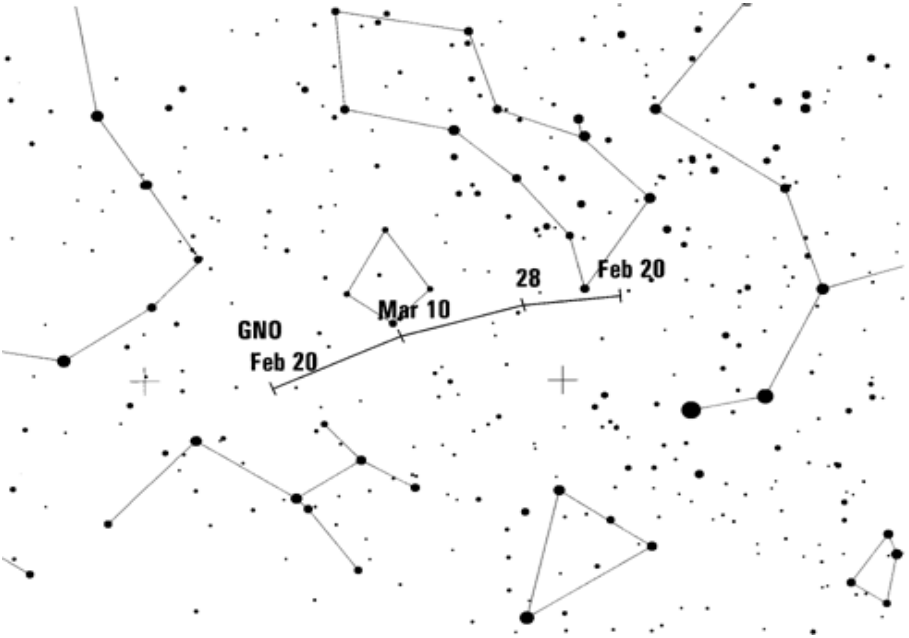
*(Continued on page 10)*

# Meteor Log—March 2015

by Tom Giguere

The month of March is a quiet one for predictable meteor showers. So, it's a good time to take a deep plunge into the only shower of the month, the γ-Normids.

*(Continued on page 11)*




| First Quarter | Full Moon | Last Quarter | New Moon |
|---|---|---|---|
| February 25 | February 3 | February 12 | February 18 |

| Shower | Activity | Maximum | | Radiant | | $V_\infty$ | *r* | ZHR |
|---|---|---|---|---|---|---|---|---|
| | | Date | λ☐ | α | δ | km/s | | |
| Gamma Normids (GNO) | 2/25→ 3/22 | (Mar 14) | 354° | 239° | -50° | 56 | 2.4 | 6 |

Meteors big or small, we like to watch them all! Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

# Treasurer's Report

by April Lew

| HAS Financial Report January 16, 2015 to February 15, 2015 | | | |
|---|---|---|---|
| Beginning Balance | | | 2,706.41 |
| Income: | | | |
| | Dues Received | 264.00 | |
| | Donation | 30.00 | |
| | Astronomy Magazine renewal | 34.00 | |
| Total Income | | | 328 .00 |
| | | | |
| Expenses: | | | |
| | January Astronews printing & mailing | 126.96 | |
| | February Astronews printing & mailing | 154.56 | |
| | Astronomy Magazine subscription | 34.00 | |
| Total Expenses | | | 315.52 |
| | | | |
| Ending Balance | | | 2,718.41 |

.We welcome four new members this month. They are **Jimbo Perry, Manfred, Evelyn, and Elizabeth Mueller (donation $10.00), Jennifer Lee,** and **Lara Owczarsk.**

Many thanks to those renewing their membership (Matthew and Nicholas Takamatsu (donation $20.00), Brian Hill and Jo Rowley, Michael Baylog, Adelaide Brenner, Gary Chock, Gary and Eileen Ward, Glenn Nanamori, Andre Plourde, Larry Wise, and Walter Murawski). As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

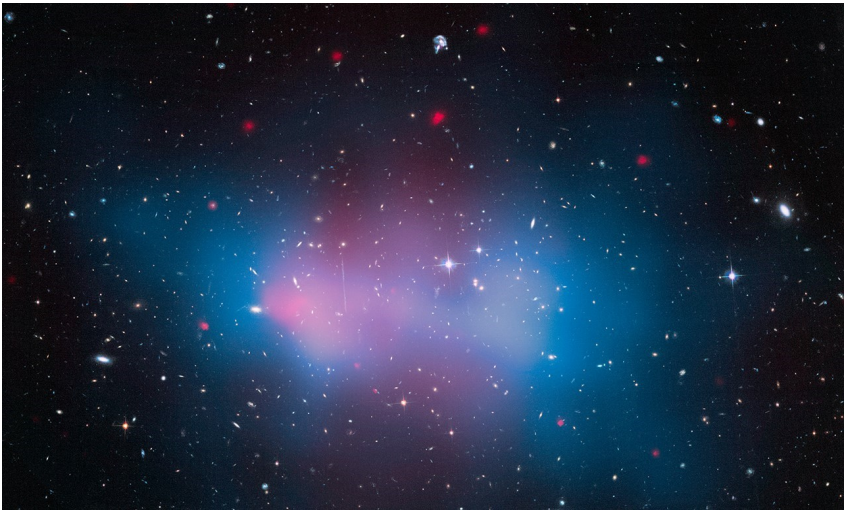


*Image credit: NASA, ESA, J. Jee (UC Davis), J. Hughes (Rutgers U.), F. Menanteau (Rutgers U. and UIUC), C. Sifon (Leiden Observatory), R. Mandelbum (Carnegie Mellon U.), L. Barrientos (Universidad Catolica de Chile), and K. Ng (UC Davis). X-rays are shown in pink from Chandra; the overall matter density is shown in blue, from lensing derived from the Hubble space telescope. 10 billion light-years distant, El Gordo is the most massive galaxy cluster ever found.*

## The Night Sky Network by John Gallagher

DID YOU KNOW? The Hawaiian Astronomical Society (HAS) is a member of the NIGHT SKY NETWORK (NSN) which is sponsored by NASA and managed by the Astronomical Society of the Pacific (ASP). Since HAS is a member of the NSN, all club members are in effect members also. However, to gain access and use the NSN benefits, members of HAS must "register" individually on the NSN. As the club's NSN Coordinator, I recently discovered there are many benefits available to the "public" and can also be a benefit to club members. Just for fun go to http://nightsky.jpl.nasa.gov and check out what you can do. When you reach the NSN page, the first thing to do is to Set Current Location. In the box type in your ZIP or location as indicated and click Return. This should then show your location. Do not click on "Set to current location". (If you omit this step you will get activities in USA) Then check out what's on the page such as public events, Universal Sky Guide for "month", sun and moon data, crash course in Astronomy (caution:

*(Continued on page 11)*

*(Continued from page 8) Meteor Log*

For most of their activity, γ-Normid ZHRs (Zenith Hourly Rates) seem to be virtually undetectable above the background sporadic rate. The maximum itself has been reported as quite sharp, and an analysis of IMO data from 1988–2007 showed an average peak ZHR of ~ 6 at $\lambda = 354^\circ$, with ZHRs < 3 on all other dates during the shower. Limited data means this is uncertain, and rates may vary somewhat at times, with occasional broader, or less obvious, maxima having been noted in the past. Results since 1999 have suggested the possibility of a short-lived peak alternatively between $\lambda \sim 347^\circ$ –$357^\circ$, equivalent to 2015 March 8–18. Recent video and visual plotting information confirmed activity from that region, but a new analysis of video data obtained only from locations south of the equator has indicated that the activity occurs preferentially around March 25 ($\lambda = 4^\circ$ ) instead, from a radiant at $\alpha = 246^\circ$ , $\delta = -51^\circ$ . Post-midnight watching yields better results, when the radiant is rising to a reasonable elevation from southern hemisphere sites (the radiant does not rise for many northern ones). The shower badly needs more regular attention, and March's new Moon period favors both the potential single peaks on March 15 and 25, plus the second half of the possibly extended maximum spell, with little to no moonlight interference. All observing techniques can be employed.

It is clear that this shower is poorly characterized, especially when experts are casting about to pindown the true shower peak. Simply put, if you think you see a Gamma Normid, report it! More data will help. If you don't see one, plan on viewing the Lyrids in April.

*(Continued from page 10) The Night Sky Network*

the section Join the Network is for clubs – not individuals). If you check Clubs and Events, you get a calendar showing "public events" but not private events such as school star parties. Clicking the event in the calendar provides additional information. If you click on Night Sky Planner, you are provided with sun and moon data, weeks weather report, plus additional info. Clicking on Outreach Resources brings you a wealth of information. You can search for specific information or you can select a "keyword" to search. An interesting side light is what is available at the top of the NSN page where it says "Jet Propulsion Labs". Just to the right are several links with lots of information to keep you busy for hours.

## Old Telescopes and their observatories by Charles Rykken

The last page features two pictures of the Michael Telescope at the Cincinnati Observatory Center. I find these to be a really pleasant adventure as you can get a feel for what it was like for 19th century U.S. astronomers and look through a state of the art scope at the time. No computers, just you and the stars, Wow!

**H.A.S.**
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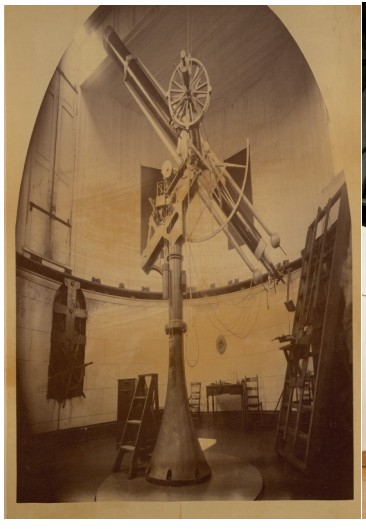
Place cover up this snudge with some-thing. A post-age stamp is suggested..



**The Michael Telescope at the Cincinnati Observatory Center**
Above photos courtesy of Craig Niemi, Exec Dir of above observa-tory. Left scope ca 1846 right today. This is one of the oldest extant scopes in the U.S. if not the oldest. It is open to public use. If you are ever in Cincinnati, check it out. More info at
www.cincinnatiobservatory.org