The Astronews

HUI KILOLANI

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November 2016

www.hawastsoc.org

December Potluck!

In the meeting minutes on page 6 Gretchen West has a reminder that next month will be our semi-annual potluck. We may be changing it to annual. There is going to be a lot happening in terms of club policy at the December meeting. We will be putting forth a new dues policy because of increased printing costs. There will also be an election of officers. The potluck is reason enough to show up, but there really is a whole lot more.

(Continued from page 2) President's Message

example. The idea seems to have been favorably received by the members at these meetings.

In order for this to be successful, enough members with a large enough variety of equipment will need to participate. If you are potentially interested, please send me an e-mail message with the equipment you would be willing to present. This would in no way obligate you to participate, but I'd like to get an idea of what we could include if we decide to proceed. I'm also interested in ideas about how to organize this event. I look forward to your messages. Thanks.

Chris Peterson

Inside this issue:

Upcoming Events:

The next meeting is on Tuesday November 1st 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., Oct. 30th 3:30 PM in POST building at UH.

President's Message
November 2016

The European Space Agency's Exo-Mars 2016 Mission consisted of two parts. The Trace Gas Orbiter (TGO) has arrived in orbit at Mars. It will be a while before it begins its scientific work. The Schiaparelli Entry, descent and landing Demonstrator Module (EDM) has crashed onto the surface. While EDM was scheduled to take a few days of scientific data on the ground, its primary objective was to demonstrate Europe's capability to land a spacecraft on Mars. That objective has clearly failed. Early indications are that the thrusters that were supposed to slow EDM to a safe landing speed cut off prematurely. Although the U.S. has had a lot of success with recent missions, these were preceded by many years when more missions failed than succeeded. It's still hard to go to Mars.

The Juno spacecraft at Jupiter has also had a bit of trouble recently. It entered safe mode shortly before its second close pass of the planet. It has since recovered, but no data was taken during closest approach, and a thruster burn to make its orbit more circular and quicker has been postponed until the next orbit. Perijove will be on December 11.

I have, during the last two meetings, brought up the possibility of arranging a star party around providing an opportunity to compare various kinds of astronomy equipment. Our club members own a variety of telescopes, mounts, eyepieces, imaging equipment, etc. We could pool our resources to give ourselves a chance to compare the performances of different pieces of equipment under the same conditions. This could be useful for someone considering buying new eyepieces, for

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Hawaiian Astronomical Society
P.O. Box 17671
Honolulu, Hawaii 96817

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Observer's Notebook—November 2016 by Jay Wrathall

Planets Close To the Moon
Times are Hawaii Standard Time

Nov 2, 10h, M 3.7° E of Saturn
(34° from sun in evening sky)
Nov 2, 20h, M 6.8° N of Venus
(38° from sun in evening sky)
Nov 6, 01h, M 5.3° N of Mars
(74° from sun in evening sky)
Nov 9, 04h M 0.95° NNW of Neptune
(112° from sun in evening sky)
Nov 12, 02h, M 2.7° SSE or Uranus
(151° from sun in evening sky)
Nov 24, 17h, 05h, M 1.8° NNE of Jupiter
(47° from sun in morning sky)

Mercury does not pass close to the moon this month.

Other Events of Interest
Times are Hawaii Standard Time

Nov 6, First Sunday in November
(Mainland changes to standard time.)
Nov 14, 01:30, Moon at perigee
(Closest to earth in 30 years)
Nov 14, 03:52h, Full Moon
(Less than 3 hours after moon at perigee, very high tides.)
Nov 17, Leonid meteors
Nov 23, 06h, Mercury 3.4 S of Saturn
(15° from sun in evening sky)
Nov 29, 02.18h, New Moon

Planets in November

Mercury
☿
is visible low in the evening sky late in November.

Venus
♀
shines brightly in the evening sky at a magnitude of -4.1.

Mars
♂
Can be viewed in the southwest in the evening. It is now at about +0.6 magnitude.

Jupiter
♃
shines brightly in the eastern sky before dawn.

Saturn
♄
is low in the southwest at sunset.

Uranus
♅
reached opposition last month, so is in the sky most of the night. Best viewed in late evening

Neptune
♆
is in the eastern sky at sunset and can be observed most of the night.

1-Ceres (Dwarf Planet)
①
Reached opposition on Oct 20 at magnitude +7.4, so is in the sky most of the night.

18 Melpomene (Asteroid)
Reached opposition on Oct 23 at magnitude +8.0.

HAWAIIAN ASTRONOMICAL SOCIETY
GENERAL MEMBERSHIP MEETING
September 6, 2016

President Chris Peterson called the October 4, 2016 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 twenty-one members and four visitors in attendance.

Hawaii Space Lecture Series – There is no lecture scheduled this month for the Hawaii Space Lecture Series. Lectures usually take place at the NASA Pacific Regional Planetary Data Center, room 544 in the Pacific Ocean Science and Technology Building on the Manoa campus of the University of Hawaii. Should you be interested in upcoming lectures or for information you can contact NASA PRPDC at 808-956-3132 or on the Web go to http://www.higp.hawaii.edu/prpdc.

Visitors – This month four visitors joined us to enjoy the evening. Mr. Christopher Baddiley and Susy Casillas are currently visiting Hawaii from the United Kingdom. Mr. Baddiley, a retired physicist, has a great interest in preserving the night skies and speaks out clearly on light pollution. While in Hawaii he will meet with Dr. Richard Wainscoat at the Institute for Astronomy.

Also joining us this month are Thomas Anuhealii and Braven Cabigon of the Hawaiian Voyaging Society. These two gentlemen are joining us this evening to help us better understand the use of the night sky in ancient and modern way-finding.

Upcoming Events: Saturday, October 29, 2016 at Punahou School will be the location of this year's annual Lacy Veach Day of Discovery. We have had members sign up to help during the event.

2017 Star Party Schedule – The schedule of meetings as well as dark sky and suburban star parties has been posted on the club website. There was some discussion the terms under which we are able to access and use the Dillingham Airport site.

International Observe the Moon Night - October 8, 2016 is the next scheduled suburban star party at Kahala Community Park in East Honolulu and Geiger Park out in Ewa Beach. It is also the date of the International Observe the Moon Night. So come out and join us to become a "lunatic" and observe the moon in all its glory.

Dues News – Chris Peterson started a discussion about the reasons the HAS Board feels that a raise in clubs may be in the offing. Suggestions for the

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November 2016

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
30	31	1 7:30 PM Club Meeting	2	3	4	5 5:35 PM Public Star Party(G) 5:35 PM Public Star Party(K)
6 sunset 18:37	7 6:45 PM Astronomy class Star Party	8	9	10	11	12
13 sunset 18:42	14	15	16	17	18	19 5:35 PM Public Star Party(D)
20 8:00 PM Globe at Night sunset 18:46	21 8:00 PM Globe at Night	22 8:00 PM Globe at Night	23 8:00 PM Globe at Night	24 8:00 PM Globe at Night	25 8:00 PM Globe at Night	26 8:00 PM Globe at Night 5:30 PM Club Star Party(D)(Private)
27 8:00 PM Globe at Night sunset 18:50	28 8:00 PM Globe at Night	29 8:00 PM Globe at Night	30 8:00 PM Globe at Night	1	2	3

☐☐Upcoming Star Parties☐☐

Public Party-Dillingham November 19 Gretchen West
Public Party Geiger November 5
Public Party Kahala November 5

Upcoming School Star Parties

		No school parties for November

(Continued from page 4) Meeting Minutes
increase were to continue the $20/year membership fee for those members who would take the online version of the Astronews, while those who would like to continue receiving a hard copy of the Astronews would have their dues increase to $25/year. Student fees would be $12 and $15 respectively. Reasons for the increase were listed as expenses for mailing of the Astronews, monthly refreshments, complementary dinners for guest speakers, and equipment upgrades and purchases. We will continue this discussion through to the December meeting when a vote by the attending members will be taken.

H.A.S. Elections coming in December – The yearly H.A.S. Board of Directors meeting will take place during the December General Membership meeting. Those who want to run for office should submit their names to the elections officer during the November meeting. We are currently looking for an elections officer.

New Ideas for Star Parties – In an effort to get more people to come to our star parties, Chris Peterson has initiated discussions on H.A.S. conducting special equipment demonstrations at star parties. Such demonstrations will help members become more familiar with eyepieces and other equipment. We will have further discussions at the November and December meetings.

Star Party Report – Star Party Coordinator Mark Watanabe spoke briefly about upcoming school star parties.

Other upcoming school events are:

Oct 6 – Punahou School
Oct 7 – Assets School on Ohana Nui Way, off of Nimitz Highway.
Unity Christian School would like to schedule a party but has not yet designated dates. They are looking at dates in December (7, 8, or 9) 2016, or January (19 or 20) 2017. Keep your dates open!
A group of home-schooled students would like to have a star party Dec 1, 2016 in Kapolei.

Pot Luck Supper - We will be having a Pot Luck Supper prior to the December 2016 General Membership meeting. Pencil it in on your calendars and consider what you will bring to help us celebrate the holiday season. The supper will be held in the Activity room adjacent to the Bishop Museum Planetarium.

Calendars and Bumper Stickers - H.A.S. Treasurer April Lew stood briefly to remind members that this year's Sky and Tel astronomy calendars will be preordered only after payment of $6.00 per calendar has been received. Club bumper stickers are available from April for $3.00 each.

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Is Proxima Centauri's 'Earth-like' planet actually like Earth at all?

NASA's Space Place

By Dr. Ethan Siegel

Just 25 years ago, scientists didn't know if any stars—other than our own sun, of course—had planets orbiting around them. Yet they knew with certainty that gravity from massive planets caused the sun to move around our solar system's center of mass. Therefore, they reasoned that other stars would have periodic changes to their motions if they, too, had planets.

This change in motion first led to the detection of planets around pulsars in 1991, thanks to the change in pulsar timing it caused. Then, finally, in 1995 the first exoplanet around a normal star, 51 Pegasi b, was discovered via the "stellar wobble" of its parent star. Since that time, over 3000 exoplanets have been confirmed, most of which were first discovered by NASA's Kepler mission using the transit method. These transits only work if a solar system is fortuitously aligned to our perspective; nevertheless, we now know that planets—even rocky planets at the right distance for liquid water on their surface—are quite common in the Milky Way.

On August 24, 2016, scientists announced that the stellar wobble of Proxima Centauri, the closest star to our sun, indicated the existence of an exoplanet. At just 4.24 light years away, this planet orbits its red dwarf star in just 11 days, with a lower limit to its mass of just 1.3 Earths. If verified, this would bring the number of Earth-like planets found in their star's habitable zones up to 22, with 'Proxima b' being the closest one. Just based on what we've seen so far, if this planet is real and has 130 percent the mass of Earth, we can already infer the following:

- It receives 70 percent of the sunlight incident on Earth, giving it the right temperature for liquid water on its surface, assuming an Earth-like atmosphere.
- It should have a radius approximately 10 percent larger than our own planet's, assuming it is made of similar elements.
- It is plausible that the planet would be tidally locked to its star, implying a permanent 'light side' and a permanent 'dark side'.
- And if so, then seasons on this world are determined by the orbit's ellipticity, not by axial tilt.

Yet the unknowns are tremendous. Proxima Centauri emits considerably less ultraviolet light than a star like the sun; can life begin without that? Solar flares and winds are much greater around this world; have they stripped away the atmosphere entirely? Is the far side permanently frozen, or do winds allow possible life there? Is the near side baked and barren, leaving only the 'ring' at the edge potentially habitable?

Proxima b is a vastly different world from Earth, and could range anywhere

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Meteor Log—November 2016

by Tom Giguere

The Leonids (013 LEO) will be average this year and will have interference from the Moon, which will be a few days past full.

Detailed analysis reveals that there are two consecutive, very similar showers whose activity intervals overlap by only two degrees in solar longitude: the first is the November Orionids (250 NOO), followed by the Monocerotids (019 MON). In the last days of November the shower is the strongest source in the sky. The radiant is located in northern Orion, 4° north of α Orionis. This location is close to the Northern Taurids, but far enough east to be distinguishable. The faster velocity of the November Orionids should help distinguish these meteors from the slower Taurids. The radiant culminates near 2h local time, but is above the horizon for most of the night. New Moon on November 29 offers best circumstances to for viewing.

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First Quarter	**Full Moon**	**Last Quarter**	**New Moon**
November 7	November 14	November 21	November 29

Shower	**Activity**	**Maximum**		**Radiant**		V_∞	*r*	**ZHR**
		Date	$\lambda_\odot$	**α**	**δ**	**km/s**		
Northern Taurids (017 NTA)	10/20→ 12/10	Nov 12	230°	58°	+22°	29	2.3	5
Leonids (013 LEO)	11/06→ 11/30	Nov 17	235.27°	152°	+22°	71	2.5	15
α-Monocerotids (246 AMO)	11/15→ 11/25	Nov 21	239.32°	117°	+01°	65	2.4	Var
Nov. Orionids (250 NOO)	11/13→ 12/06	Nov 28	246°	91°	+16°	44	3.0	3

See, hear, or find a meteor(ite) – share the news! For more info: Thomas 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 September 16 – October 15 2016			
Beginning Balance			701.12
Income:			
	Dues Received	170.00	
	Donation	14.00	
	Astronomy Magazine	34.00	
	Sky and Telescope	32.95	
	Bumper Sticker sales	12.00	
	Calendar sales	11.50	
Total Income			274.45
Expenses:			
	Oct. Astronews printing & mailing	108.10	
	Stamps	15.04	
	Astronomy Magazine	34.00	
	Sky and Telescope	32.95	
Total Expenses			190.09
Ending Balance			785.48

Many thanks to those renewing their membership (James and Michele Branchaud, Elton and Liezl Chambers, Steve Chun, Susan Girard, James MacDonald, Lisa Ota, and Natheniel, Elizabeth, and Ian Shippen)

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As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

2017 CALENDARS Available!!!!

The "Deep Space Mysteries" calendar presented by Astronomy Magazine, extra large size: 13" by 23' opened, is filled with stunning images of stars, planets, galax-

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(Continued from page 6) Meeting Minutes

Guest Speakers - Thomas Anuhealii and Braven Cabigon of the Hawaiian Voyaging Society joined us this evening to help us better understand the use of the night sky in ancient and modern wayfinding. Using the Planetarium, the two gentlemen explained Hawaiian "star lines" that allow Hawaiian navigators to interpret the sky for wayfinding activities. They helped us better understand the Hawaiian moon phases as well.

Peter's Show & Tell – Vice-President Peter Besenbruch presented a Power Point presentation on the following:

The Osiris Rex "lift off"
The Tian Jiang lift off
The clouds of Titan
The Pan Stars Survey of objects.
Pluto – surface water and subsurface water.
Mercury – strike-slip faulting in Mercury's crust.
Ng2440

Mahalo – As there was no further business, the meeting was adjourned at 9:15 p.m. Post meeting goodies were available in the rotunda.

Respectfully Submitted

Gretchen West

H.A.S. Secretary

(Continued from page 8) Meteor Log Tom Giguere

Please see photo on page 11

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This small meteorite is from the NWA 869 strewn field, near Tindouf, Algeria. Currently classified as an L3.8-6 ordinary chondrite it shows brecciation and abundant chondrules.

(Continued from page 9) Treasurer's Report

ies, and other deep space wonders, with highly informative essays accompanying each photograph. They are available at a discount through our club for only $6.50! Treasurer April Lew will be accepting orders for the 2016 calendars: $6.50 each, cash or check, at the October HAS meeting, or mail your order by Oct 10 with check made out to "Hawaiian Astronomical Society" To: Hawaiian Astronomical Society, P.O. Box 17671, Honolulu, HI 96817.

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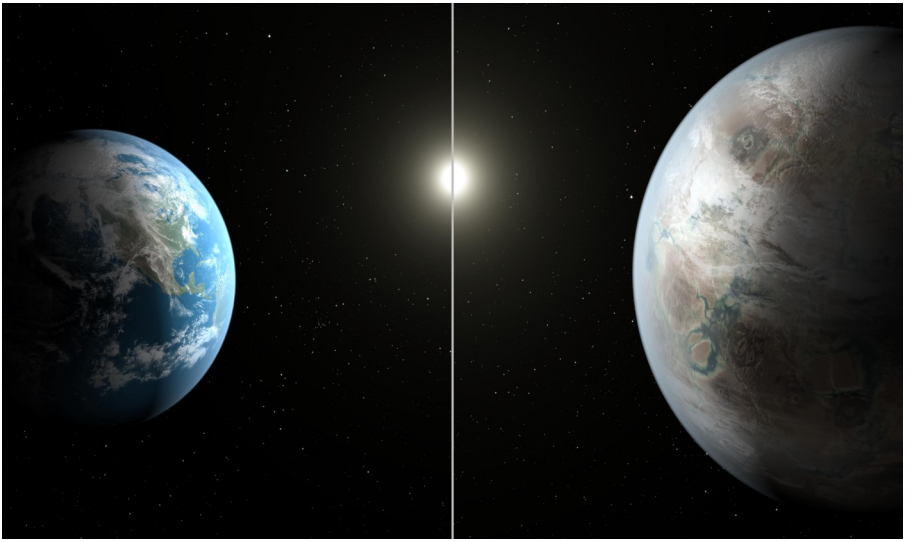
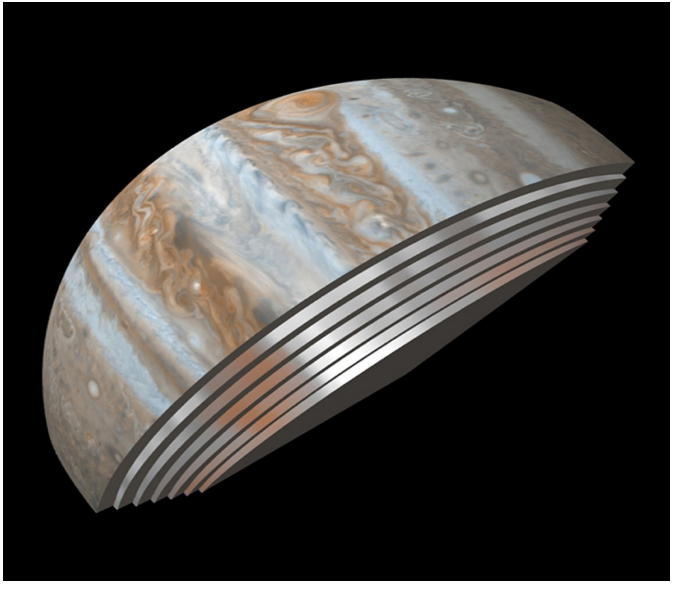
(Continued from page 7) Space Place
from actually inhabited to completely unsuitable for any form of life. As 30m-class telescopes and the next generation of space observatories come online, we just may find out!

Looking to teach kids about exoplanet discovery? NASA Space Place explains stellar wobble and how this phenomenon can help scientists find exoplanets: http://spaceplace.nasa.gov/barycenter/en/



The exoplanet Kepler-452b (R), a possible candidate for Earth 2.0, as compared with Earth (L). Image credit: NASA/Ames/JPL-Caltech/T. Pyle.

H.A.S.
P.O. Box 17671
Honolulu, HI 96817



Juno's First Slice of Jupiter (http://www.jpl.nasa.gov/spaceimages/details.php?id=PIA21107) Image credit: NASA/JPL-Caltech/SwRI/GSFC