

Explainers & Show me

Charles Rykken

The Fermilab is working on an experiment to find if we are living in a hologram(http://www.fnal.gov/pub/presspass/press_releases/2014/2-D-Hologram-20140826.html). Since this broaches a subject near and dear to my heart I thought I would take the opportunity to expand on why I believe this is one of the most important experiments of this century (at least, so far). There is an article by David M. Harrison(<http://www.upscale.utoronto.ca/~harrison/>) at the Univ of Toronto who puts the matter in layman's language(<http://www.upscale.utoronto.ca/PVB/Harrison/HighEnergy/>)

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Year End Potluck!!



On Tuesday December 2.

Arrive at 6:00 PM before club meeting at

7:30PM. Location:

Bishop Museum Hall of Discovery (right outside

entrance to Planetarium lobby doors) Come early and get to know your fellow members.

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Upcoming Events:

- The next meeting is at 7:30 p.m. on Tuesday, Nov..7th at the Bishop Museum.
- 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., Nov 2 at 3:30 PM in POST building at UH.

President's Message October 2014

All the spacecraft at Mars avoided any damage from the passage of Comet Siding Spring and did what they could to observe it. As I write, only some preliminary results have been announced, but the comet turned out to be only about 500 meters across, about half of what was expected. This comet is of special interest because it is from the Oort cloud.

It is believed that many objects in the Oort cloud were scattered there by the giant planets early in the solar system's history, so they actually formed closer to the Sun than were objects in the Kuiper belt. We tend to think of the Oort cloud as a distant spherical shell. Remember, though, that Oort cloud members started out on very elliptical orbits that periodically bring them back to the region where they originated. Because objects move much faster near perihelion than near aphelion, these objects spend most of their time far from the Sun. A snapshot, then, shows a spherical shell of comets. Indeed, many of these objects have been perturbed by the gravity of nearby stars into more circular orbits. However, some approach much closer but go unnoticed because they never get close enough to the Sun to become active. Siding Spring must have had some kind of gravitational interaction that brought it all the way in to the orbit of Mars.

It is hoped that studying Siding Spring will improve our understanding of conditions in the early solar system since the comet shouldn't have been altered much since its formation. Of course, the spacecraft at Mars weren't designed to study comets, but they did have front row seats. In addition, Hubble and other telescopes in space and on Earth will also be gathering whatever data they can.

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The Astroneus is the monthly newsletter of the Hawaiian Astronomical Society. Some of the contents may be copyrighted. We request that authors and artists be given credit for their work. Contributions are welcome. Send them to the Editor via e-mail. The deadline is the 15th of each month. We are not responsible for unsolicited artwork.

Planets Close To the Moon
Times are Hawaii Standard Time

- Nov 1, 15h, M 4.4° NNW of Neptune
(115° from sun in evening sky)
- Nov 4, 08h, M 1.7° NNE of Uranus
(151° from sun in evening sky)
- Nov 14, 05h, M 5.0 SSW of Jupiter
(90° from sun in morning sky)
- Nov 25, 22h, M 5.0° S of Mars
(49° from sun in evening sky)
- Nov 28, 19h, M 4.4° NNW of Neptune
(87° from sun in evening sky)

Other Events of Interest
Times are Hawaii Standard Time

- Nov 1, 03h, Mercury at greatest elongation
(18.7° west of the sun in morning sky)
- Nov 6, 12:22h, Full Moon
- Nov 15, 01h, 6 Hebe at opposition
- Nov 17, Leonid Meteors
- Nov 17, 23h Saturn at conjunction with sun
(Passes into morning sky)
- Nov 22, 02:31h New Moon
- 6-Hebe (Asteroid) - reaches opposition on November 15 at magnitude +8.6.

Planets in October

<p>Mercury</p>  <p>is visible early in the month low in the south-east before sunrise.</p>	<p>Venus</p>  <p>is too close to the sun to be viewed this month.</p>	<p>Mars</p>  <p>is visible low in the SW evening sky in Sagittarius at magnitude +0.5.</p>
<p>Jupiter</p>  <p>rises about midnight and is visible in the early morning hours.</p>	<p>Saturn</p>  <p>is too close to the sun to be visible in November.</p>	<p>Uranus</p>  <p>reached opposition on October 7, so is visible in the evening hours.</p>
<p>Neptune</p>  <p>is near the meridian at sunset and can be viewed in the western sky until late in the evening..</p>		<p>Pluto (Dwarf Planet)</p>  <p>Is visible in SW after sunset, but very difficult to view.</p>

President Chris Peterson called the October 7, 2014 meeting of the Hawaiian Astronomical Society to order at 7:33 p.m. The meeting was held in conference room Paki I, on the grounds of the Bishop Museum, Honolulu, Hawaii. There were twenty-seven members and five visitors and one returning former member in attendance.

Hawaii Space Lecture Series – Regular 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. This month the subject of the lecture will be “Overview of the Hawaii Space Flight Laboratory. 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>.

In the News – In the very near future, the first satellite designed, launched and controlled by a U.S. university will be put into orbit from the Kauai’s Barking Sands range.

Table cover – The new

table cover with the club’s name and logo has been received. The deep blue table cover with white lettering and logo was displayed. It will be in use at the Lacy Veach Day of Discovery on the grounds of Punahou School on Saturday, October 25th.

Lacy Veach Day 2014 – Members of the Hawaiian Astronomical Society will participate with astronomers at the upcoming Lacy Veach Day of Discovery to be held again on the grounds of Punahou School Saturday, October 25th.

Storage Box Instillation – Barry Peckham is designing, constructing and installing a storage box for our digital projector. The box will be mounted to the wall in the Planetarium behind-the-scenes work area. Payment for the work done has been made.

Insurance – April Lew has reported that payment for the club’s liability insurance has been paid to the Astronomical League.

For Sale – The club received a donation of a Makutov telescope. We will be

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Hawaiian Astronomical Society Event Calendar

November 2014						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1 8:04 PM Public Star Party(G) 8:03 PM Public Star Party(K)
2 sunset: 7:48	3	4 7:30 PM Club Meeting	5	6	7	8
9 sunset: 7:48	10	11	12 8:00 PM Globe at Night	13 8:00 PM Globe at Night	14 8:00 PM Globe at Night	15 8:00 PM Globe at Night 8:01 PM Club Star Party (D) (Private)
16 8:00 PM Globe at Night sunset: 7:49	17 8:00 PM Globe at Night	18 8:00 PM Globe at Night	19 8:00 PM Globe at Night	20 8:00 PM Globe at Night	21 8:00 PM Globe at Night	22 8:00 PM Public Star Party(D)
23 sunset: 7:51	24	25	26	27	28	29 8:04 PM Public Star Party(G) 8:03 PM Public Star Party(K)
30 sunset: 7:53						

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offering to sell it to a club member. The scope needs additional hardware that was not present at the time of the donation. Anyone interested should speak to Peter Besenbruk. Should no one express an interest in the scope, we will advertise it on-line.

Farewell – It was with a heavy heart that members of the club learned of the passing of Dr. Melvin Levin. Mel had great enthusiasm for astronomy. We will miss him greatly. Members signed a condolence card Clare, his widow, and his family.

Elections – H.A.S. will hold its yearly election for members of the Board of Directors in December. All current Board Members

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President's Report (Continued from page 2)

Just as we are fortunate to receive photons that carry information from distant regions of the universe that none of us can hope to ever visit, we benefit from the unpredictable visits of comets from parts of the solar system that are as yet unreachable by us. I am glad we are harvesting this bounty of information

Chris

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are willing to stand for election again this year. If anyone is contemplating becoming a Board member, please speak to our Elections Chairwoman, Joanne Bogan. We will entertain nominations at the November meeting.

Star Party Report –

Chris Peterson reported that the September 27th Star Party was quite a success. The skies were clear and seeing was good. During the evening, attendees witnessed the moon occulting the planet Saturn, with Antares and Mars at their closest.

John Gallagher reported that our club received a Mars globe, as a Night Sky Network award. This generous gift from the Night Sky Network will be on loan to the Bishop Museum's Planetarium, while we will have use of it when needed.

School star parties have been scheduled for:

Waimalu – further contact for finalization
Waihua Elementary - Jan. 23, 2015

Ala Wai Elementary –
April 24, 2015

Orionid Meteor Shower

- The Orionid meteor shower will take place on Tuesday, October 21, 2014. Those interested were urged to join others at Mona Farms on Waianae Valley Road. The peak hours will be good, and astronomical gear is not necessarily needed. Those interested were asked to contact Chris Peterson. Mosquito repellent is suggested.

Dillingham Airfield – It was decided at this meeting that exit times for the Dillingham Public and Club Star Parties will be decided upon by the listed Keymaster. Everyone agreed that we would try to aim for the first scheduled exit time to be about two hours after sunset. This would give astron-

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Space Place in a Snap: Where Does the Sun's Energy Come From



This month, the Space Place is doing something a little bit different for our monthly column—providing you with a beautifully informative and educational poster about the mechanics of our sun. This poster accompanies our latest "Space Place in a Snap" animation. This "Snap" series is a set of narrated videos and posters that, together, explain basic scientific concepts in a dynamic new medium. Entertaining in their own right, we also wish to bring this new resource to your attention as an educational tool. In this edition, we address the important question of why our sun is so hot.

To see the video that goes along with this poster, visit: <http://spaceplace.nasa.gov/sun-heat>.

Where does the sun's energy come from?

National Aeronautics and Space Administration

Every 15 millionths of a second, the sun releases more energy than all humans consume in an entire year. Its heat influences the environments of all the planets, dwarf planets, moons, asteroids, and comets in our solar system.

And that light travels far out into the cosmos—just one star among billions and billions.

Create a 'solar wind' that pushes against the fabric of interstellar space billions of miles away.

Allows gases and liquids to exist on many planets and moons, and causes icy comets to form fiery halos.

Powers the chemical reactions that make life possible on Earth.

That Heat...

How does a big ball of hydrogen create all that heat? The short answer is that it is big. If it were smaller, it would be just a sphere of hydrogen, like Jupiter. But the sun is much bigger than Jupiter. It would take 433,333 Jupiters to fill it up!

That's a lot of hydrogen. That means it's held together by a whole lot of gravity. And THAT means there is a whole lot of pressure inside of it. There is so much pressure that the hydrogen atoms collide with enough force that they literally meld into a new element—helium.

The energy travels outward through a large area called the convective zone. Then it travels onward to the photosphere, where it emits heat, charged particles, and light.

This process—called nuclear fusion—releases energy while creating a chain reaction that allows it to occur over and over and over again. That energy builds up. It gets as hot as 15 million degrees Fahrenheit in the sun's core.

Sub-atomic particles → Energy → Nuclear Fusion

Space Place in a Snap!

www.nasa.gov

For more articles, games, and activities, visit spaceplace.nasa.gov

Meteor Log—November 2014

by Tom Giguere

The Meteor observers' group had an enjoyable viewing session out at Mouna farm on Tuesday evening October 21. The Orionid viewing party certainly started out with questionable weather conditions, since hurricane Ana had just passed by on Friday and Saturday, and was slowly moving to the northwest. The air was very moist, and it was clear that the remnants of the storm were still present. Against all odds, the weather significantly improved from 95% cloudy to about 95% clear around 10:30pm. At this point our group count began to increase from 3, which had held for the last couple of hours, to our final count of 29. This count was comprised of half sporadics and half Orionids. The early attendees brought food to share during the dinner hour

with the farm's 9 or 10 residents – this was a nice way to kick off the evening. Late arrivals (Vanapruk's family, Peter Besenbruch) got lost coming in, as it's very difficult to make your way after dark, but did make it and were welcome additions to the party. Never too late for desert! All-in-all, this viewing site is a nice alternative site for observing, and may be used in the future, possibly as soon as the November Leonids...



First Quarter

November 29

Full Moon

November

Last Quarter

November 14

New Moon

November 22

Shower	Activity	Maximum		Radiant		V_{∞} km/s	r	ZHR
		Date	$\lambda \square$	α	δ			
Northern Taurids (NTA)*	10/20 → 12/10	Nov 12	230°	58°	+22°	29	2.3	5
Leonids (LEO)*	11/06→ 11/30	Nov 17	235.27°	152°	+22°	71	2.5	15*
α -Monocerotids (AMO)	11/15 → 11/25	Nov 21	239.32°	117°	+01°	65	2.4	Var

Please call/email if you have an interest in viewing the November Leonids. For more info: Thomas Giguere, 808-782-1408, Thomas.giguere@yahoo.com; Mike Morrow, PO Box 6692, Ocean View, HI 96737.

HAS Financial Report September 16, 2014 to October 15, 2014			
Beginning Balance	2864.06		
Income:			
	Dues Received	128.00	
	Telescope Rental	20.00	
	Calendars	52.50	
Total Income	200.50		
Expenses:			
	Astronews Printing and Postage October issue	123.59	
	Postage	29.40	
	Tablecloth	171.72	
	Storage Box	40.00	
	Ast. Magazine subscription	34.00	
	Calendar order	103.92	
Total Expenses	502.63		
Ending Balance	2,561.93		

We welcome three new members this month. They are Andre and Daunna Yanoviak, Dyron Mack, and Rueban and Tifany Subramaniam. Many thanks also to those renewing their membership(Stephany and Daniel Taba, Otis Wikman, and Don Poole and Cynthia Lee). As a reminder, please check your membership anniversary date listed on the Astronews address label. Clear skies to all!

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Neuroquantology/NQ.pdf). Simply put the difference is between whether reality exists as independent objects or is all relationships. This takes a while to digest as it is such a strange idea. It is at the heart of some string theories, which I am sure you have heard of. Up until this upcoming experiment it has not been possible to devise an experiment to see if the relationship view of reality could be verified. For those readers interested in a deeper exposition of

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(Treasurer's Report Continued from page 6)

omers and visitors alike time to enjoy the night sky. Second exit times will continue to be about 10:30 p.m. and if the skies are cooperating a final exit time of 12:00 midnight.

Gifts – Looking for a nice, useful Christmas gift for a friend or acquaintance? Consider an astronomy calendar. April Lew is taking orders for the 2015 calendars.

The Mars Maven, a U.S. mission is working to delve into the evolution of volatiles in Mars' atmosphere. India's mission will be looking for methane on Mars.

Comet Siding Spring (C/2013 A1) is a comet that will make a close pass of Mars around October 19th 2014. The comet may endanger man-made satellites orbiting the Red Planet. The comet is visible through a telescope at about Mag. 9.5 in the late evening sky, getting earlier as the month lengthens.

The Cassini mission to Saturn is doing well. Its images have shown the planet's hexagonal polar vortex has become more visible. The close passes to Titan in 2016-2017 will bring it on a close equatorial orbit to image the rings of Saturn.

Cometary mission – Chris Peterson displayed images of the Comet 67P/Churyumov-Grasimenko. Rosetta is a robotic space probe built and launched by the European Space Agency to perform a detailed study of comet 67P/Churyumov-Gerasimenko with both an orbiter and lander module. ([Wikipedia](#)) The Rosetta Spacecraft, of the European Space Agency, will rendezvous with Comet 67P/CG early in August. The orbiter/lander will both orbit and land on the comet. The mission is to image the icy comet as it moves around the sun. The lander portion of the spacecraft will descent to the surface while the orbiter will remain in orbit outside the coma. The orbiter/lander will endeavor to

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obtain more information about the make up and cometary processes of this object

Peter Besenbruck – Peter Besenbruck extolled the virtues of a recent telescope acquisition, a Celestron – Skywatcher Pro 120 D, on sale via Amazon. He then demonstrated his magic with his program, Carte du Ciel, showing the path of this evenings lunar eclipse.

Book Review – Paul Lawler spoke briefly about an astronomy/space related novel he recently has read. Paul urged members to try The Martian, a book by author Andy Weir. He was pleased with the book and thought others in the club might enjoy it.

Mahalo – As there was no further business, the meeting was adjourned at 9:24 p.m.

Respectfully Submitted,

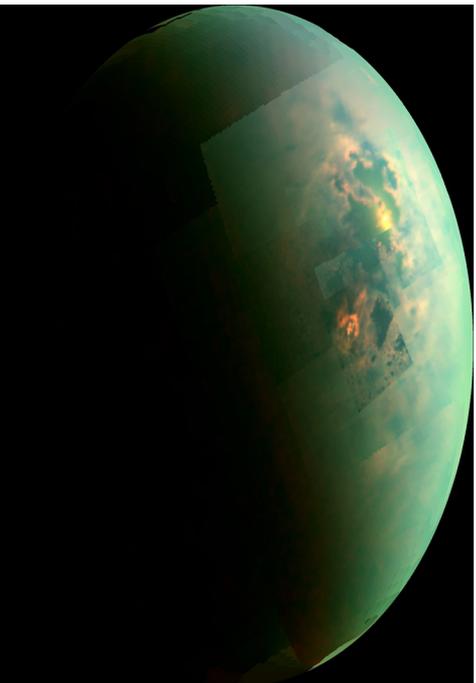
Gretchen West
H.A.S. Secretary

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these ideas see (<http://arxiv.org/abs/hep-th/0507235>). A documentary that dramatizes the schism is (<http://topdocumentaryfilms.com/what-is-reality/>) The heading for this article comes from the long ongoing tension between the theoretical and experimental communities. I think people like Richard Feynman have built strong bridges between these communities and he supported the relational model. As amateur astronomers we tend to be more experimentalists. Show me!! In fact, we show ourselves each time we peer out into the starry night sky. Physicists themselves are not of one mind when it comes to the science of quantum mechanics (more strictly quantum field theory) which is the place where the question of relational vs absolute is drawn in stark contrast by the double slit experiment. Here is a reference to a recent “survey” (<http://www.preposterousuniverse.com/blog/2013/01/17/the-most-embarrassing-graph-in-modern-physics/>)

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



About This Image

Specular Spectacular

This near-infrared, color mosaic from NASA's Cassini spacecraft shows the sun glinting off of Titan's north polar seas. While Cassini has captured, separately, views of the polar seas (see PIA17470) and the sun glinting off of them (see PIA12481 and PIA18433) in the past, this is the first time both have been seen together in the same view.

Image Credit: NASA/JPL-Caltech/University of Arizona/University of Idaho