



## Inside this issue:

### President's Message

Bishop Museum is now closed on Tuesdays, so we need to pick a different day for our meetings. At the May meeting we chose Monday, June 1, for our next meeting. Now it's time to choose a permanent day. The only practical choices are Monday, Wednesday, or Thursday.

Please vote by sending me an e-mail with your first choice among those days or, if you can't do that, tell me by phone. See the Astronews masthead for my contact info. If you never attend meetings and don't plan to regardless of the day, then you might as well not vote, but if you do attend or have not been attending because Tuesday doesn't work for you, then please use this opportunity to let us know which day you prefer. I will announce the results in the next Astronews, so voting must end by June 15<sup>th</sup>.

I enjoyed some 21<sup>st</sup> Century moments recently, sitting in my living room and watching on my computer live video of astronauts repairing the Hubble Space Telescope. When I was born there was no space program, much less a space telescope,

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### Upcoming Star Parties

<b>Public Party May 30</b>	<b>Kahala/Waialeale</b>
<b>Club Party June 13</b>	<b>Dillingham</b>
<b>Public Party June 20</b>	<b>Dillingham</b>
<b>Public Party June 27</b>	<b>Kahala/Waialeale</b>
<b>Public Party July 11</b>	<b>Dillingham</b>

### Upcoming Events:

- The next meeting is at 7:30 p.m. on **Monday, June 1st** at the Bishop Museum.
- Bishop Museum's next planetarium show with **Barry Peckham** is Friday, **Jun 5 & 19** at 7:00 p.m. [www.bishopmuseum.org/calendar](http://www.bishopmuseum.org/calendar)
- The next Board Meeting is Sunday **May 31st** at 3:30 p.m. at the POST building at UH.

## President's Message

no personal computers or internet, and not even color TV. It's exhilarating to think what other new wonders I'll see in my lifetime.

The Hubble repairs all seem to have gone well, so we should enjoy several more years of images and insights from that observatory. The Europeans have launched Planck and Herschel, two telescopes that will explore the universe at different wavelengths, Planck looking at microwaves and Herschel at the far infrared. Both will be cooled with liquid helium and have working lifetimes limited to a few years. In a symbolic handoff, the Spitzer space telescope just ran out of its coolant. Hubble uses no such coolant, so it should outlive the others.

The James Webb Space Telescope (JWST) is scheduled to launch in 2014. The JWST will use innovative technology such as a segmented mirror that must be deployed after launch and an electronic cryocooler to keep the detectors cold without liquid helium. It will see mainly in the infrared with limited visible light capability.

It's sometimes easy to forget that we truly live in an age of wonders. Let's appreciate them as we learn about the universe we inhabit.

*Chris*

Carolyn Kaichi sent the following message from the Intel IEF 2009: Two students from Hawaii received science awards for their science projects.

Travis Le won an award from the American Association of Physics Teachers—\$800. His project, "Wasp 2-B or NOT Just 2-B: Does WASP 2 have more than one planet?" Travis is a member of HAS and won our award for the same project.

Lucia Mocz won an award from the National Institute of Drug Abuse \$1,000 and a trip to the National Institutes of Health in Maryland. She also won 3rd place grand award in the category of Computer Science \$1,000.

Hawaii's student delegation comprised the top state winners. Twenty-two students represented our state 15 girls, 7 boys ranging in age from 14-18. There were 1,563 finalist from over 50 countries.

### Hawaiian Astronomical Society

P.O. Box 17671  
Honolulu, Hawaii 96817

#### President

*Chris Peterson*

956-3131

chrisp@higp.hawaii.edu

#### Vice President

*Barry Peckham*

542-8658

barry@liteboxtelescopes.com

#### Secretary

*Gretchen West*

737-4742

gwest002@hawaii.rr.com

#### Treasurer

*Jim MacDonald*

261-2162

jim.macd@hawaiiantel.net

#### *The Astroneus* Editor

*Carolyn Kaichi*

551-1030

editor@kilolani.net

#### Board Members-at-Large

*John Gallagher* 683-0118

gallaghej002@hawaii.rr.com

*Harry Zisko* 262-1947

harryz@pobox.com

#### HAS Webmaster

*Peter Besenbruch*

prb@lava.net

#### School Star Party Coordinator

*Forrest Luke*

lukef003@hawaii.rr.com

*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 16<sup>th</sup> of each month. We are not responsible for unsolicited artwork.

## Meeting Minutes

by Gretchen West

President Chris Peterson called the **April 7, 2009** meeting of the Hawaiian Astronomical Society to order at 7:40 p.m. The meeting was held at the Atherton Halau on the grounds of the Bishop Museum. There were twenty-eight members and three visitors in attendance.

Hawaii Space Lecture Series: President Chris Peterson reports as of April 7<sup>th</sup> this month's lecture for the Hawaii Space Lecture Series has not been scheduled. However, Chris Peterson reports that he hopes that Lionel Wilson will soon lecture on "The Physics of Magma." Should you be interested in any upcoming lectures or for information you can contact NASA PRPDC at 808-056-3132 or on the Web go to <http://www.higp.hawaii.edu/prpdc>.

FYI – Chris Peterson reviewed current items of interest. The Kepler mission is designed to survey our region of the Milky Way and attempt to discover planets within the habitable zones of their systems.

NASA's next Space Shuttle mission is slated for the month of May, during which astronauts will repair the aging Hubble Space Telescope. The lengthened mission will include swapping out more items and increase the life of the space telescope.

On March 6, 2009, at @ 4:00 am HST, there was an occultation by Pluto's satellite Nix of a star.

The second annual "Hawaii Geek Meet" will take place Sunday April 19, 2009, between 10:30 onward at Magic Island. Meet organizers have invited HAS to come out and share the daytime sky.

Big Island member John Swatek is seeking to sell astronomy related items. Unfortunately, Mr. Swatek indicates that his rummage sale takes place on April 5<sup>th</sup> two days prior to our general membership meeting. Chris Peterson informed members of Mr. Swatek's information.

Sam Rhodes, long time friend of HAS is giving away his G8". He is looking for a good home for his telescope to a knowledgeable enthusiast.

Forrest Luke spoke briefly about mentoring students interested in astronomy.

School Star Party Report: Forrest Luke reported that there will be at least four school star parties in during the Month of April.

April 17<sup>th</sup> – Hanahaoli School at Kahala Community Park

April 24<sup>th</sup> – Pearl Harbor Elementary School

April 29<sup>th</sup> – Lanakila Elementary School

April 30<sup>th</sup> – Ala Wai Elementary School.

Visitors: We had no visitors at this month's general membership meeting

Bishop Museum – April is "Mad About Science" at Bishop Museum. And will highlight Climate Change on Saturday April 12<sup>th</sup>.

International Year of Astronomy - In the recent past we have celebrated *100 Hours of Astronomy* – just April 2<sup>nd</sup> through April 4<sup>th</sup>; *Earth Hour* – March 28<sup>th</sup> from 8:30 to 9:30 p.m. It was agreed by all at the meeting that while other cities in America and in Europe publicized the concept for Earth Hour, Honolulu got started late and the media did not pick up the idea; The *Globe At Night* conducted a survey March 16<sup>th</sup>

(Continued on page 4)

## Meeting Minutes (Continued)

through March 28<sup>th</sup>.

H.A.S. recently profited from the IYA. We were the recipients of a Night Sky Meter, which is able to calibrate the darkness of our Hawaiian nights. The Night Sky Meter is the product of the NASA science teleconferences John Gallagher has been able to make available to club members. The teleconferences are following the lead of the format for IYA, so the upcoming conferences will concentrate on “Our Sun” and “Clusters of Stars.” Anyone interested in these teleconferences, which take place during the afternoons HST, should contact John Gallagher.

John Gallagher reports that the bill SB536 regarding the “Starlight Reserve” a proposed lighting law for the State of Hawaii, has passed out of the Finance Committee and will move to the Legislature. We are hoping for the best.

Night Sky Network – John Gallagher reports the H.A.S. has received a new Tool Kit.

Book Reviews – Mel Levin gave a heartfelt reviews of three books related to astronomy; Star Gazer by Fred Watson – a guide to telescope construction; Miss Levitt’s Stars - a biography of one of the *women computers* employed by and exploited by Harvard University early in the 20<sup>th</sup> Century; and Heavenly Intrigue – Kepler vs. Brahe – by Joshua and Anne Lee Guilder. Mel urges everyone to read these books.

Items – Joanne Bogan reports that the Bishop Museum Planetarium is no longer booked by the Japanese Tourist Bureau Tours and is available to the club for its use. Steve Chun brought new acquisitions to share. The members admired his new solar adaptor and solar adapted diagonal.

Lunar Planetary Science Conference - President Chris Peterson recently attended this year’s conference in Houston, Texas. Chris reports that there were more meetings that one person could attend so you really had to pick and choose. He reports that the papers presented were stimulating. One presenter Mark Zoric spoke of the reorientation of the Moon in the past. During another presentation discussions of early recordings of information from moon missions in the sixties is being reprocessed on modern instruments and some additional information is coming to light.

FYI – Vice President Barry Peckham spoke briefly on the recent transit of Titan across Saturn. While the orientation of Saturn’s rings seems less spectacular, it does provide us with new and interesting views we might not otherwise be able to see. So Keep Your Eyes To The Skies!

As there was no further business, the meeting was adjourned at 8:40 p.m. Refreshments were served.

Respectfully Submitted,  
Gretchen West, HAS Secretary

## Scoring More Energy from Less Sunlight

For spacecraft, power is everything. Without electrical power, satellites and robotic probes might as well be chunks of cold rock tumbling through space. Hundreds to millions of miles from the nearest power outlet, these spacecraft must somehow eke enough power from ambient sunlight to stay alive.

That's no problem for large satellites that can carry immense solar panels and heavy batteries. But in recent years, NASA has been developing technologies for much smaller microsatellites, which are lighter and far less expensive to launch. Often less than 10 feet across, these small spacecraft have little room to spare for solar panels or batteries, yet must still somehow power their onboard computers, scientific instruments, and navigation and communication systems.

Space Technology 5 was a mission that proved, among other technologies, new concepts of power generation and storage for spacecraft. "We tested high efficiency solar cells on ST-5 that produce almost 60 percent more power than typical solar cells. We also tested batteries that hold three times the energy of standard spacecraft batteries of the same size," says Christopher Stevens, manager of NASA's New Millennium Program. This program flight tests cutting-edge spacecraft technologies so that they can be used safely on mission-critical satellites and probes.

"This more efficient power supply allows you to build a science-grade spacecraft on a miniature scale," Stevens says. Solar cells typically used on satellites can convert only about 18 percent of the available energy in sunlight into electrical current. ST-5 tested experimental cells that capture up to 29 percent of this solar energy. These new solar cells, developed in collaboration with the Air Force Research Laboratory in Ohio, performed flawlessly on ST-5, and they've already been swooped up and used on NASA's svelte MESSENGER probe, which will make a flyby of Mercury later this year.

Like modern laptop batteries, the high-capacity batteries on ST-5 use lithium-ion technology. As a string of exploding laptop batteries in recent years shows, fire safety can be an issue with this battery type. "The challenge was to take these batteries and put in a power management circuit that protects against internal overcharge," Stevens explains. So NASA contracted with ABSL Power Solutions to develop spacecraft batteries with design control circuits to prevent power spikes that can lead to fires. "It worked like a charm." Now that ST-5 has demonstrated the safety of this battery design, it is flying on NASA's THEMIS mission (for Time History of Events and Macroscale Interactions during Substorms) and is slated to fly aboard the Lunar Reconnaissance Orbiter and the Solar Dynamics Observatory, both of which are scheduled to launch later this year. [See this new piece of equipment on the back cover.](#)

**Planets Close To the Moon**

Times are Hawaii Standard Time

- June 13, 04h, M 2.7° NNW of Neptune  
(116° from sun in morning sky)
- June 13, 05h, M 3.2° NNW of Jupiter  
(116° from sun in morning sky)
- June 15, 15h, M 5.1° NNW of Uranus  
(89° from sun in morning sky)
- June 19, 03h, M 7.8° NNW of Venus  
(45° from sun in morning sky)
- June 19, 04h, M 5.9° NNW of Mars  
(45° from sun in morning sky)
- June 20, 22h, M 5.9° NNW of Mercury  
(21° from sun in morning sky)
- June 27, 11h, M 5.8° SSW of Saturn  
(70° from sun in evening sky)

**Other Events of Interest**

Times are Hawaii Standard Time

- June 6, 11h, Venus at greatest elongation  
(45.9° west of the sun in morning sky)
- June 7, 08:11h, Moon Full
- June 13, 02h, Mercury greatest elongation  
(23.5° west of the sun in morning sky)
- June 15, 04h, Moon 0.37° SSE of Juno  
(116° from sun in morning sky)
- June 20, 19:45h, Summer solstice  
(First day of Summer is on the 21<sup>st</sup> because the solstice is on the 21st in UT)
- June 20, 20h, Venus 2.0° SSE of Mars  
(45° from sun in morning sky)
- June 22, 09:35h, Moon New
- June 22, 18h, Pluto at opposition

 <b>Mercury</b> is visible very low in the eastern dawn during the first three weeks of June.	 <b>Venus</b> is at greatest elongation of 45.9° on June 5 and dominates the morning sky.	 <b>Mars</b> is close to Venus in the predawn sky with a separation of only 2.0° on June 20.
 <b>Jupiter</b> rises before midnight by the end of June. High in the morning sky in the predawn hours.	 <b>Saturn</b> is visible in the SW before sunset. This is the last month for good evening views of the ringed planet this year.	 <b>Uranus</b> is between Venus and Jupiter in the morning sky.
 <b>Neptune</b> is close to Jupiter in the morning sky.	 Dwarf Planet <b>Pluto</b> reaches opposition on June 23. Look around midnight for the best views of this dwarf planet this year.	 Asteroid <b>(3) Juno</b> is very close to Jupiter in the morning sky.

## *Meteor Log - June 2009*

*by Mike Morrow*

The twilight in June shortens the nighttime hours. There are not much in the way of major meteor showers in June anyway.

Saturday the 27th, the June Bootides. Radiant 14h56m, +48deg. Rates are very variable running from none to about 60 or 70 an hour. The shower had ben dormant for about 70 years but in 1998 it was unexpected with rates of near 100 per hour. The shower is connected with Comet Pons-Winnecke. If the shower is more than close to nothing the maximum may be within about six hours of 08h30m UT or 10h30m local time on the 27th of June. The Moon should not cause much trouble. The meteors are very slow.

If you are interested in observing meteors contact Tom Giguere at 672-6677, or write Mike Morrow, P.O. Box 6692, Ocean View, Hawaii 96737

## *Meeting Minutes*

*by Gretchen West*

President Chris Peterson called the **May 4, 2009** meeting of the Hawaiian Astronomical Society to order at 7:43 p.m. The meeting was held at the Planetarium on the grounds of the Bishop Museum. There were twenty-five members and two visitors in attendance.

Hawaii Space Lecture Series: President Chris Peterson reports that as of May 5<sup>th</sup> this month's lecture for the Hawaii Space Lecture Series has not been scheduled. However, Chris Peterson reports that he believes that Bill Bodke will speak on planet formation during the month of June. Should you be interested in any upcoming lectures or for information you can contact NASA PRPDC at 808-056-3132 or on the Web go to <http://www.higp.hawaii.edu/prpdc>.

FYI – The NASA space shuttle mission to repair the Hubble space telescope is scheduled for lift-off on May 11, 2009. It will involve one hundred sixteen new tools, spare parts and new equipment. During the mission astronauts will make at least five space walks to accomplish their work of installing a wide field camera and new spectrograph.

The atmospheric “vog” of Saturday May 2<sup>nd</sup> allowed club members some steady viewing of the planet Saturn and some brighter objects. Low contrast object were not easily seen through the veil of volcanic haze. Saturn's ring line was easily seen, as were at least six of its larger moons.

The Starlight Reserve Bill SB536 currently in the Hawaii State Legislature has passed out of committee and will go to the full House and Senate for a final vote in the next few weeks. Should it pass, the bill will stipulate a realistic start date – effective immediately.

Astronomy Day – This year's Astronomy Day was celebrated on May 2<sup>nd</sup> and club members shared views of the daytime and nighttime skies at Kahala Mall during the daylight hours of 1:00 p.m. to 5:00 p.m. and at the Kahala Community Center

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Note: the HAS meeting date has been changed to Monday June 1st

June 2009

 Printable View

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 23	31	1	2 Comet C/2008 Q3 (Garradd) Closest Approach To Earth (0.933 AU) M 10.3 7:30p HAS Meeting	3	4 7:45p Waikele Elementary (Star Party)	5	6
	7 Full Moon	8	9	10	11	12	13 Grand Canyon Star Party Comet C/2008 T2 (Cardinal) Perihelion (1.202 AU) M 10.97
Week 24	14 Comet 64P/Swift-Gehrels Perihelion (1.377 AU) M 12.1	15	16	17	18 3p Teleconference on Black Holes	19 Conjunction: Mars, Venus, Crescent Moon.	20
	21 Summer Solstice, 05:45 UT	22 New Moon	23 Pluto At Opposition M 13.9	24	25 For more events look here.	26	27
Week 25	28 Asteroid 2001 FE90 Near-Earth Flyby (0.018 AU) M 12.41	29	30	1	2	3	4 Earth At Aphelion (1.017 AU From Sun) Asteroid 7 Iris at Opposition (8.7 Magnitude)

Steve Chun wowed the public at Kahala with views of the sun through his new scope.

Terrific Transits – Stargazers will have the opportunity to view three upcoming transits of Titan across the face of Saturn on May 14<sup>th</sup>, May 29<sup>th</sup>, and next month on June 5<sup>th</sup>. The May 14<sup>th</sup> five hour transit will begin @ 7:36 p.m.

Donation - As a thank you for their school star party, the students and faculty of Pearl Harbor Elementary School made a generous donation of \$25 to H.A.S.

School Star Party Report: Forrest Luke reported that there would be at least four school star parties in during the Month of May.

May 15<sup>th</sup> - Red Hill Elementary

May 29<sup>th</sup> – Hickam Elementary

June 4<sup>th</sup> – Waikele Elementary

June 8<sup>th</sup> – Camp Mokuleia for Cancer Kids.

Visitors: We had two visitors at this month’s general membership meeting- Howard Yamasaki, a new member and Justin Kahualoa.

Bishop Museum –Bishop Museum has announced that it will be closed on Tuesdays until further notice.

For the month of June 2009, the general membership meeting will take place on Monday, June 1<sup>st</sup>.

As the first Tuesday of each month has historically been the day of our monthly general membership meeting, we must choose a new meeting day.

Members have a choice of voting for either the first:

**Monday** or **Wednesday** or **Thursday**.

of each month for our future general membership meetings. President Chris Peterson will tally voting. Members with e-mail accounts may contact Chris Peterson at [chrisp@higm.hawaii.edu](mailto:chrisp@higm.hawaii.edu) or if you are not on-line, by phone at 956-3131.

Help Needed – Chris Peterson announced that there is a gentleman who has contacted the club seeking help in setting up and working with his “go-to” Meade ETX-60. It is a short focus refractor. If you are an individual who might be able to help this gentleman, please contact Chris Peterson.

Science Café – Carolyn Kaichi reports that the next get together at P.F. Chang will start at 7:00 p.m.

July Speaker – Michael Chauvin, who has spoken before the club on a previous occasion, will again at the July General Membership Meeting. The subject of his talk will be Archeoastronomy and Hiram Bingham.

International Year of Astronomy – Purchasers are still awaiting the arrival of Galileoscopes but we look forward to the celebration of Galileo’s first views through a scope during the month of November 1509.

Night Sky Network – John Gallagher reports the next Night Sky Network teleconference will take place on May 28<sup>th</sup> and will begin about 3 p.m. If you are interested, contact At Large member John Gallagher.

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HAS Financial Report as of May 15, 2009

<b>Initial Balance:</b>	<b>\$4,937.99</b>
Receipts:	
Donations	45.00
Dues Received	246.00
Magazine Payment	66.95
<b>Total Income:</b>	<b>\$357.95</b>
Expenses:	
Astronews	142.33
Science Fair Award	50.00
Magazine Subscriptions	66.95
Postage	2.70
Refreshments	24.90
<b>Total Expenses:</b>	<b>\$286.88</b>
<b>Final Balance</b>	<b>\$5,009.06</b>

There are three new members this month. They are **Catherine Evans, Diane Lindberg and Howard Yamasaki**. A special thanks to the Pearl Harbor Elementary School and Ralph Krause for their donations. Thanks and clear skies to all renewing their memberships during the month.

<p><b>HAS Yahoo Group</b>  <a href="http://tech.groups.yahoo.com/group/HawaiianAstronomicalSociety/">http://tech.groups.yahoo.com/group/HawaiianAstronomicalSociety/</a></p>
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<b>Upcoming School Star Parties</b>		
Fri	6/4	Waikele Elementary (4 classes, 3rd grade)
Mon	6/8	Camp Anuenue (Mokuleia) ~60-70 kids, 50 adults. Camp Anuenue is a camp for kids with cancer, or cancer survivors age 7-17. While there will be a nearly full moon on this night, this is for a great cause and the "theme" will be Astronomy
<p>If you are interested in helping out at a School Star Party, sign up on the monthly sheet at the HAS Meeting or contact the Star Party Coordinator: Forrest Luke at 623-9830 or e-mail at <a href="mailto:lukef003@hawaii.rr.com">lukef003@hawaii.rr.com</a></p>		

Given Away – H.A.S. member Jay Wrathall shared some equipment with members at this meeting. Jay brought a box of no longer needed equipment to the meeting and allowed members to take what they needed. Thank you, Jay.

Invitation – H.A.S. member Greg McCartney spoke briefly to the meeting about a Institute for Astronomy Star Show he will be coordinating for June 21<sup>st</sup> at Ko` Olina. This is not a H.A.S. event.

Mr.. McCartney extended an open invitation to H.A.S. members and to anyone willing to help out at this event with their scope. This event will be at the 4<sup>th</sup> Lagoon at Ko` Olina beginning at about 7:00 p.m. and run until 10:00 p.m. Members will be admitted free of charge but need to contact Mr. McCartney at 291-2464 for a **free star pass** before June 13<sup>th</sup>. Ms. Donna Bever was listed as the IFA point of contact. Mr. McCartney is affiliated with “Stars Above Hawaii” and is hoping for support from club members.

New Scope – H.A.S. member Steve Chun brought his new solar telescope with 0.7-angstrom bandwidth.

Websites – Chris Peterson shared websites that will allow members to view NASA pictures from various missions. They are:

For NASA info - [nasascience.nasa.gov/missions](http://nasascience.nasa.gov/missions)

For Mars Reconnaissance Orbiter info – [mars.jpl.nasa.gov/mro](http://mars.jpl.nasa.gov/mro)

A Trip Across the Night Sky – Vice President Barry Peckham dimmed the lights and took H.A.S. members on a trip across the Night Sky, to conclude our first meeting back in the Bishop Museum Planetarium. Great Job, Barry!

As there was no further business, the meeting was adjourned at 8:55 p.m. Refreshments were served.

Respectfully Submitted,  
Gretchen West  
H.A.S. Secretary

## POLICY STATEMENT

It is the policy of the Hawaiian Astronomical Society (HAS) not to publish any advertisements for, for-profit activities or events in the club’s newsletter, *Astronews*, or other publications, fliers, etc. This policy applies to any advertisement regardless of the requester’s affiliation with HAS.

Advertisements of personally owned astronomy-related equipment of HAS members may be included in the club’s publications depending on the availability of space and at the Editor’s discretion.

The Hawaiian Astronomical Society chooses not to participate in any activity or event where a fee is charged attendees. Members may participate as private individuals as long as they do not represent HAS in any capacity. Exceptions may be granted for charitable fund-raising activities with the prior approval of the Board of Directors.

**Hawaiian Astronomical Society  
P.O. Box 17671  
Honolulu, HI 96817-0671**



*Helen Johnson, a spacecraft technician at NASA's Goddard Space Flight Center, works on one of the three tiny Space Technology 5 spacecraft in preparation for its technology validation mission.*

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