The Astronews

HUI KILOLANI

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President's Message

by Chris Peterson

As I write this, the last flight of the Endeavour space shuttle is carrying a 7-ton instrument called the Alpha Magnetic Spectrometer (AMS-02) to the International Space Station. I was not sure what the instrument would do, so I looked it up on Wikipedia, and this is what I found:

The AMS-02 is designed to look for various unusual types of matter by examining cosmic rays. Cosmic rays are high-energy subatomic charged particles. When cosmic rays enter Earth's atmosphere, they often collide with particles in the atmosphere and create secondary showers of particles. This instrument will study the primary particles in space.

One thing AMS-02 will look for is antimatter. It is uncertain how much antimatter was created in the Big Bang and how much is left. A previous version of this instrument, AMS-01, flew aboard Discovery

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Inside this issue:

☆ Upcoming Star Parties ☆

Kahala/Ewa Party**	**June 4**
Club Party-Dillingham	**June 25**
Public Party-Dillingham	**7/2 & 7/30**

Upcoming Events:

☆The next meeting is 7:30PM on **Tues., June 7** at the Bishop Museum Planetarium.

☆Bishop Museum's next planetarium shows with **Barry Peckham** are Friday, **June 3 & 17** at 8:00 p.m.

www.bishopmuseum.org/calendar

☆The next Board Meeting is Sun., **June 5** at 3:30 p.m. at the POST building at UH.

Closer Look...

2011 SCIENCE FAIR REPORT

Once again one of our youngest HAS club members, Travis Le, has excelled in his pursuit of academic excellence by placing in the prestigious Intel International Science (ISEF) and Engineering Fair last month.

Travis, a junior at Punahou School and an all-around scholar, received fourth place in the Best of Physics and Astronomy category with his project, "Determining 'Hot Spots' Through Correlations of CMEs and Solar Flares".

Travis was one of four winners from our state to win awards at ISEF this year, which was held at the Los Angeles Convention Center in Downtown L.A. This was Travis' third year at ISEF, qualifying for the mainland trip by placing at the Hawai'i district level or the Hawai'i State Science and Engineering Fair (HSSEF) since the 9th grade.

There were over 1500 students from approximately 65 countries, regions and territories from around the world competing in the 17 science and engineering categories. Prizes include scholarships, cash awards, trips, internships and goods totalling $4 million. Travis' award included a $1000 cash prize.

"This year's ISEF was definitely one of most memorable experiences of my life so far," says Travis, "I was extremely surprised, but also ecstatic to win. But what really made it memorable was the week that led up to those awards. From walking in Santa Monica to shopping at Trader Joe's to the pin exchange to Universal Studios, we not only bonded as a Hawai'i Delegation, but we also got to meet new people from all over the world who shared the same passion for science."

Travis hopes that his experience will inspire other Hawai'i students to pursue the

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The Astronews is a 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 email. The deadline is the 16th of each month. We are not responsible for unsolicited artwork.

Meeting Minutes

by Gretchen West

President Chris Peterson called the May 2, 2011 meeting of the Hawaiian Astronomical Society to order at 7:32 p.m. The meeting was held at the Planetarium on the grounds of the Bishop Museum. There were 17 members and two visitors in attendance.

Associated Lectures: Chris Peterson reports that the next free Hawai'i Space Lecture Series talk has not been scheduled as of this date. 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 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 Hawai'i.

Missions: Chris reviewed new information on several missions. Recent data from the Cassini mission shows the fine scale structures or corrugations in the rings of Saturn. Chris indicated that the irregularities in the rings most probably were the result of a cometary impact in about 1983. Next, the Mars Spirit rover still has not communicated with Earth. The lack of communications leaves doubt that the rover will be revived. Opportunity rover still appears to be on the move and is situated near a small crater where it is gathering data. The small amount of movement of the rover may indicate problems with its wheels.

Announcements:

Last month, H.A.S. participated in the Institute for Astronomy's Open House on April 10. ***Barry Peckham, Sue Girard, Jim MacDonald, Chris Peterson, Travis Le, and Lenore Hansen-Stafford*** all helped man the table and hand out information to the public.

This year's Astronomy Day takes place on May 7, 2011. We will again set up a display and viewing spot at Kahala Mall's Barnes & Noble beginning at one o'clock and stay until six o'clock. Afterwards we will move to Kahala Community Park and Recreation Area for our regular monthly suburban star party.

School Star Parties – We have four-star parties y during April

- May 6 – Ala Wai Elementary School
- May 9 – Mililani Mauka Elementary School
- May 10 – Pearl Harbor Elementary School
- May 11– Lanikila Elementary School and Bishop Museum.
- May 30 – MDA Event at Camp Erdmann

Last month, H.A.S. astronomers helped out at the Niu Valley Middle School star party on April 29.

Reminder: Chris reminded members that the Member-only Star Parties at Dillingham Airfield are for members to enjoy the night sky to pursue their own agenda without having to 'entertain' others without their own equipment. While they enjoy sharing the night sky with the public and with other members, the Members-only parties allow personal challenge and renewal of spirit.

Planetary Science News: President ***Chris Peterson*** explained that NASA has reported that the Mars rover Spirit will probably not revive again. The rover has not moved and while NASA has worked to get the rover moving, nothing has happened. In contrast, the rover Opportunity is still on the move.

The Allen SETI Array has been put into dormant mode due to lost funding. However, scientists are searching for public support to continue work at the facility.

Star Light Reserve: No meetings have been scheduled for the Star Light Reserve Recommendation Committee for the near future. It appears that the committee is concentrating on legislation regarding statewide lighting.

Video: Member ***John Sandor*** brought a video lecture by the Teaching Company discussing the anatomy of planetary nebulae. The lecturer used Hubble pictures to illustrate what will eventually happen to our sun. *(Continued on page 7)*

NASA's Space Place

Milky Way Safari

by Dauna Coulter and Dr. Tony Phillips

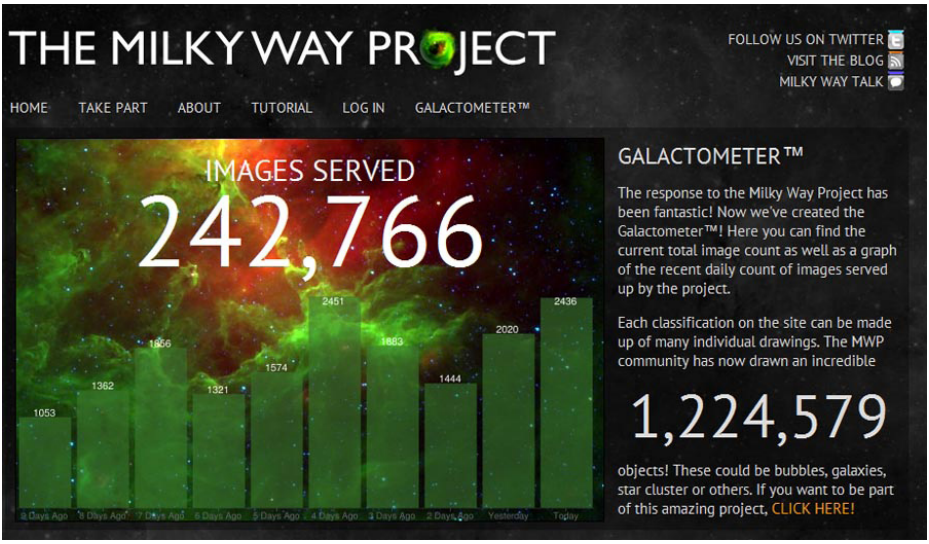
Safari, anyone? Citizen scientists are invited to join a hunt through the galaxy. As a volunteer for Zooniverse's Milky Way Project, you'll track down exotic creatures like mysterious gas bubbles, twisted green knots of dust and gas, and the notorious "red fuzzies."

"The project began about four months ago," says astrophysicist Robert Simpson of Oxford University. "Already, more than 18,000 people are scouting the Milky Way for these quarry."

The volunteers have been scrutinizing infrared images of the Milky Way's inner regions gathered by NASA's Spitzer Space Telescope. Spitzer's high resolution in infrared helps it pierce the cloaking haze of interstellar gas and dust, revealing strange and beautiful structures invisible to conventional telescopes. The Milky Way Project is helping astronomers catalogue these intriguing features, map our galaxy, and plan future research.

"Participants use drawing tools to flag the objects," explains Simpson. "So far they've made over a million drawings and classified over 300,000 images." Scientists are especially interested in bubble-like objects believed to represent areas of active star formation. "Every bubble signifies hundreds to thousands of young,

(Continued on page 9)



Volunteers study infrared images of our galaxy from the Spitzer Space Telescope, identifying interesting features using the special tools of the Milky Way Project, part of the Citizen Science Alliance Zooniverse web site. http://www.zooniverse.org/

Only one shower is visible in late June with only minor interference from the Moon. The June Boötids are a relatively weak shower with occasional outburst. Unfortunately an outburst is not expected this year, but you never know…if you observe one you should report it!

June Bootids (JBO)

This shower is a fine, rich stream associated with Comet 1P/Halley, like the OrionThis shower gained respect with the unexpected return of 1998, when ZHRs of 50–100+ were visible for more than half a day. Another outburst of similar length, but with ZHRs of 20–50 was observed on 2004 June 23, a date before definite activity had previously been recorded from this shower.

Prior to 1998, only three more probable returns had been detected, in 1916, 1921 and 1927, and with no significant reports between 1928 and 1997, it seemed likely these meteoroids no longer encountered Earth.

The dynamics of the stream were poorly understood, although recent theoretical modeling has improved our comprehension. The shower's parent, Comet 7P/Pons-Winnecke, with a period of 6.37 years has an orbit that now lies around 0.24 astronomical units outside the Earth's at its closest approach. Its most recent perihelion passage was in 2008 September. Clearly, the 1998 and 2004 returns resulted from material shed by the comet in the past which now lies on slightly different orbits to the comet itself. Dust trails laid down at various perihelion returns during the 19th century seem to have been responsible for the last two main outbursts. No predictions for activity are in-force for 2011, but conditions for checking are very favorable from the mid-northern latitudes, with only a waning crescent Moon on June 27.

New Moon	*First Quarter*	*Full Moon*	*Last Quarter*
June 1	**June 9**	**June 15**	**June 23**

Shower	Activity	Max Date	λ_{2000}	Radiant α	δ	V∞ km/s	*r*	ZHR
Bootids (JBO)	6/22 - 7/02	June 27	95.7°	224°	+48°	18	2.2	var

Many thanks to the IMO for their detailed shower factoids.

For more information on observing meteors, please contact Tom Giguere, 808-782-1408, Thomas.giguere@yahoo.com or Mike Morrow, PO Box 6692, Ocean View, HI 96737.

Planets Close To the Moon

Times are Hawaii Standard Time

June 10, 07h, **M** 7.6º SSW **Saturn**
(111º from sun in evening sky)

June 20, 13h, **M** 5.4º NNW of **Neptune**
(118º from sun in morning sky)

June 23, 09h, **M** 5.9º NNW of **Uranus**
(87º from sun in morning sky)

June 25, 18h, **M** 5.2º NNW of **Jupiter**
(60º from sun in morning sky)

June 28, 10h, **M** 1.9º NNE **Mars**
(30º from sun in morning sky)

Venus is closer than 15ºfrom the sun when near the moon in June. The moon does not pass Mercury this month.

Other Events of Interest

Times are Hawaii Standard Time

June 1, 11:02h, **Moon New**

June 12, 14h, **Mercury at superior Conj. with sun** (passes into evening sky)

June 15, 10:12h, **Moon Full**

June 21, 07:17h, **Summer Solstice**

June 27, 15h**, Pluto at opposition**

☿ Mercury

Begins a nice evening apparition the last week of June, which will last most of July.

♀ Venus

Very low in the east before dawn, but is so brigh that it can be seen in the morning twilight.

♂ Mars

Mars rises a couple of hours before the sun - magnitude about +1.1.

♃ Jupiter

Begins June about 40º and ends the month about 60º from the sun in the morning sky .

♄ Saturn

At it's highest point in the southern sky as the sun sets and is well placed for viewing all evening.

♅ Uranus

Uranus is visible in the morning sky before dawn.

♆ Neptune

Neptune is visible in the morning sky, above Uranus.

♇ Dwarf Planet Pluto

Reaches opposition on June 27. June and July are the best months to try to observe this very dim dwarf planet.

⚶ Asteroid Vesta

Opposition on Aug 5 - the brightest of the asteroids is already at +7.0 mag in June. The Dawn spacecraft will arrive nearVesta in July.

(Minutes continued from page 3)

Big Island Trip: ***John Sandor*** reported on the upcoming trip the Big Island. The sign-up period is now closed and we have 19 people signed up. As soon as the amount is determined, participants will soon be asked to forward their transportation (van rental) fee to our club treasurer, ***Jim MacDonald***.

Vice President Barry Peckham spoke about a circa 1946, home-built telescope that has be donated to the club. This ancient refractor was built in Santa Barbara, California. The club is interested in turning it into funds for the club. We wish to sell it to interested purchasers. Any interested club member should contact Barry Peckham. We will also pursue sale on the Internet.

Barry led us through information about the structures of the eye and how they allow us to see the heavens.

Visiting Observers: H.A.S. has received e-mails from amateur astronomers coming to Hawai'i to replicate Galileo's original observation of the libration of the moon on May 8, 2011.

Endeavor: The Space Shuttle Endeavor's blast-off has been rescheduled for May 10,2011. An on-board experiment will use the alpha magnetic spectrometer.

Lahaina Noon: Thursday May 26, 2011 and July 16th at 12:37 p.m. are dates to look forward to. Lahaina Noon is the time when the sun is directly overhead. When you stand outside on those two days, you will cast no shadow.

Question: Member ***Mel Levin*** asked for an expanded explanation of moon bows.

The Hawaiian Skies: With the help of ***Melody Chang***, Planetarium docent and HAS member, ***Barry*** lead us through Hawaiian nighttime skies.

As there was no further business, the meeting was adjourned at 9:13 p.m. Light refreshments were served.

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

(Science Fair continued from page 2)

broad opportunities that the science fair has awarded him through the years. "Looking back on the trip, what stands out the most for me were not the awards, but the people that I met and the friends I made."

Students that qualify for ISEF represent the best and brightest of their respective regions, so we are extremely proud of Travis as well as all the 26 students from Hawai'i.

Editor

Travis Le, HAS club member, stands outside the LA Convention Center with fellow Hawai'i delegate Connie Liu. Both Le and Liu placed 4th in their categories, Astronomy and Mathematics, respectively.

Image credit: Jon Asato, Hawai'i Academy of Science

Hawaiian Astronomical Society
Event Calendar

< June 2011 >						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30	31	1	2	3	4 7:00 PM Public Star Party(K) 7:00 PM Public Star Party(G) Sunset: 7:12 PM
5	6	7 7:30 PM Club Meeting	8	9	10 7:00 PM Ma'ema'e Girl Scout Bri	11 Sunset: 7:15 PM
12	13	14	15	16	17	18 Sunset: 7:17 PM
19	20	21	22	23	24	25 6:30 PM Club Star Party (D) Sunset: 7:18 PM
26	27	28	29	30	1	2

Volunteers Needed for School Star Parties!

Upcoming School Star Parties

Mon.	**5/30**	MDA Camp (Camp Erdman)*Waiver Required
Fri.	**6/10**	Ma'ema'e Girl Scout Bridge Camp
Fri.	**7/8**	Boy Scout Pack 564
Fri.	**9/2**	Mililani Uka Elementary

(Space Place continued from page 4)
hot stars. Our volunteers have circled almost 300,000 bubble candidates, and counting," he says.

Humans are better at this than computers. Computer searches turn up only the objects precisely defined in a program, missing the ones that don't fit a specified mold. A computer would, for example, overlook partial bubbles and those that are skewed into unusual shapes. "People are more flexible. They tend to pick out patterns computers don't pick up and find things that just look interesting. They're less precise, but very complementary to computer searches, making it less likely we'll miss structures that deserve a closer look. And just the sheer numbers of eyes on the prize mean more comprehensive coverage."

Along the way the project scientists distill the volunteers' data to eliminate repetitive finds (such as different people spotting the same bubbles) and other distortions. The project's main site (http://www.milkywayproject.org) includes links to a blog and a site called Milky Way Talk. Here "hunters" can post comments, chat about images they've found, tag the ones they consider especially intriguing, vote for their favorite images (see the winners at http://talk.milkywayproject.org/collections/CMWS00002u), and more.

Zooniverse invites public participation in science missions both to garner interest in science and to help scientists achieve their goals. More than 400,000 volunteers are involved in their projects at the moment. If you want to help with the Milky Way Project, visit the site, take the tutorial, and … happy hunting!

You can get a preview some of the bubbles at Spitzer's own web site, http://www.spitzer.caltech.edu/. Kids will enjoy looking for bubbles in space pictures while playing the Spitzer concentration game at http://spaceplace.nasa.gov/spitzer-concentration/.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. ☆

Hawai'i and NASA PARTNER IN SPACE EXPLORATION

Unless you have been living under a rock for the past week, you must have some awareness that there was a groundbreaking announcement between Hawai'i and NASA regading a collaboration on a wide range of activities to promote America's human and robotic exploration of space.

Governor Neil Abercrombie and NASA Associate Deputy Administrator Rebecca Keiser signed a two-year non-reimbursable Space Act Agreement Annex on May 25, during a ceremony held on the 50th anniversary of President John F. Kennedy's historic announcement committing the country to land an American on the moon and return him safely before the end of the decade.

The annex establishes a partnership between NASA's Ames Research Center at Moffett Field, Calif., and Hawai'i to explore and test new technologies, capabilities and strategies supporting America's space exploration and development goals.

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Treasurer's Report

by Jim MacDonald

HAS Financial Report for the month ending as of May 15, 2010

Initial Balance:	**$4,946.48**
Receipts:	
Donations	125.00
Dues Received	134.00
Magazine Payments	66.95
Mauka Kea Trip Deposit	1,300.00
Total Income:	**$1,625.95**
Expenses:	
Magazine Subscription	68.00
Astronews (not billed this mo.)	00
Postage	2.88
Refreshments	70.88
Total Expenses:	**$70.88**
Final Balance	**$6,501.55**

The club gained four new members this month. They include ***Albert, Blane, Mala, and Christopher Kanno.*** Thanks to ***Kevin Suehiro, Albert Kanno, and Alyce Ikeoka*** for their donations. Thanks also to all those renewing their membership this month. Come join us under the spring skies.

☆ ☆ ☆

(NASA partnership continued from page 9)

Hawaii's Office of Aerospace Development will be the lead state agency for the project, enhancing dialogue and coordination among the state, private and academic partners to enable growth and diversification of the state's aerospace economy.

"We support NASA's goal to promote public-private partnerships and multinational alliances to help reduce the cost, enhance the feasibility and accelerate the implementation of future space missions - leading to settlements beyond low-Earth orbit," said Jim Crisafulli, director of Hawaii's Office of Aerospace Development.

"Locally, this collaboration should catalyze Hawaii-based economic innovation and engage engineers, scientists, educators, and students, as well as commercial entrepreneurs, to increase the opportunities and benefits of space exploration."

There will most likely be more discussion to follow at the next HAS club meeting, so plan to be there to join in and learn more!

Editor

(President ontinued from page 1)

in 1998. Its lack of detection of anti-helium established an upper limit of 1.1 anti-helium particles per million helium particles. AMS-02 shouldbe able to improve this sensitivity by three orders of magnitude.

AMS-02 will also search for evidence of dark matter. Proposed dark matter particles called *nuetralinos* might be colliding and producing positrons, anti-protons, and gamma rays that could be detected. It will also look for strangelets, particles that contain strange quarks in addition to the up and down quarks that make up most matter on Earth.

These searches may turn up nothing, but a surer bet is the characterization of the cosmic ray environment at the ISS. Problems with the originally proposed superconducting magnet required the use of a less sensitive permanent magnet.

However, this extended the useful life of the instrument from 3 years for the cryogenically cooled model to 10 to 18 years for the version now in space. This will greatly improve our understanding of the origin points and variable flux of cosmic rays.

Any future missions carrying humans beyond low Earth orbit will benefit from a greater understanding of potentially lethal cosmic radiation.

Chris

Image credit: NASA
The AMS-02, shown here in the cargo bay of Endeavor, is a state-of-the-art particle physics detector experiment constructed, tested and operated by an international team composed of 56 institutes from 16 countries and organized under U.S. Department of Energy (DOE) sponsorship. The JSC project office oversees and directs the overall payload integration activities. The AMS Experiment will use the unique environment of space to advance knowledge of the universe and lead to the understanding of the universe's origin.

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HAS club member Travis Le, Punahou School junior, stands with fellow Hawai‘i award recipients outside the Los Angeles Convention Center. Also pictured here are students from St. Andrew’s Priory, who placed in their categories of Mathematics and Electrical Engineering. See story on page 2.

Image credit: Jon Asato, Hawai‘i Academy of Science