

June 2010

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# THE SPECTROGRAM

**Newsletter for the  
Society of Telescopy,  
Astronomy, and Radio**



## June's Meeting

The next meeting of S\*T\*A\*R will be on Thursday, June 3rd, 2010. This will be our annual business meeting and all members are highly encouraged to attend. The meeting will begin promptly at 8:00pm at the Monmouth Museum on the Brookdale Community College campus.

## Editor's Corner

Many thanks to Rob Nunn, Randy Walton, and Dave Britz for contributing to this month's Spectrogram.

Reminder to pay membership dues \$25/individual, \$35/family. Donations are appreciated. Make payments to our treasurer Rob Nunn at a club meeting or mail a check payable to S\*T\*A\*R Astronomy Society Inc to:

**S\*T\*A\*R Astronomy Society  
P.O. Box 863  
Red Bank, NJ 07701**

## September Issue

Please submit articles and contributions for the next *Spectrogram* by May 26.  
Please email to [fowler@verizon.net](mailto:fowler@verizon.net).

## Calendar

- ❖ Jun 3, 2010 – Annual Business Meeting

## Got Pix?

## Like to Write?

Have you been out observing with your friends? Have you made any great astro-images? How about a story and pictures of your latest ATM project? If you have anything you'd like to share, email [fowler@verizon.net](mailto:fowler@verizon.net) and let us know what you've got!

Sun	Mon	Tues	Wed	Thur	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

June 2010

S\*T\*A\*R  
P.O. Box 863  
Red Bank, NJ 07701  
On the web at:  
<http://www.starastronomy.org>

Edited by: Bob Fowler

## May Meeting Minutes

The May 6th, 2010 meeting of S\*T\*A\*R Astronomy Club began at 8:05 pm. There were 41 members and non-members in attendance. President Nancy McQuire chaired the meeting and began by welcoming a first time attendee.

The membership was treated to a fine lecture by Dr. Ken Kremer titled "LRO & LCROSS, America's Return to the Moon." The talk focused on many aspects of these missions such as the search for lunar water. Dr. Kremer showed many pictures of himself at NASA and also discussed the technical details of the missions.

The talk concluded at 10:12 at which time coffee break began. The meeting resumed at 10:28.

Dave Britz showed moon pictures taken at a recent star party.

Nancy McQuire then announced the following:

- The club's 8 inch dob is available for loan.
- Volunteers are needed for the election committee.
- We will be considering a 7:30 start time for meetings at June business meeting

Mike Kozic mentioned the planetarium at the Newark Museum would be reopening.

Ahmad Jrad mentioned there would be a local star parties at Doorbrook soon

The meeting was adjourned at 10:38 p.m.



This image from the Wide-field Infrared Survey Explorer (WISE) is of a special cloud of dust and gas in the constellation Canis Major catalogued as NGC 2359. The nebula is more commonly known as Thor's Helmet due to its remarkable resemblance to depictions of the headwear donned by the famed Norse god of thunder and lightning.

## Are you a S\*T\*A\*R Member?

S\*T\*A\*R is the proud owner of a **monstrous** 25" Dobsonian Obsession reflector – which members can gain access to!

Meetings are the first Thursday of each month, except July and August, at 8:00 PM at the Monmouth Museum on the Brookdale Community College campus. Meetings generally consist of lectures and discussions by members or guest speakers on a variety of interesting astronomical topics. S\*T\*A\*R is a member of United Astronomy Clubs of New Jersey (UACNJ), the Astronomical League (AL), and the International Dark Sky Association (IDA).

Memberships:  Individual....\$25  Family....\$35

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

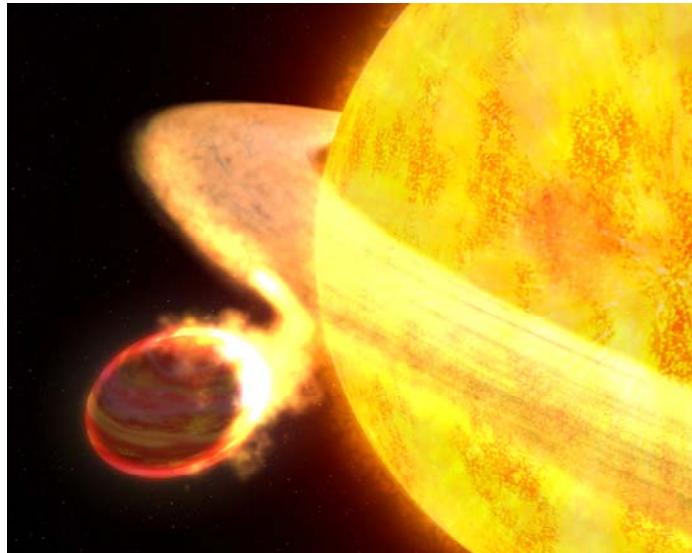
Phone \_\_\_\_\_

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Make checks payable to: S\*T\*A\*R Astronomy Society, Inc. and mail to P.O. Box 863, Red Bank, NJ 07701



## Hubble Finds a Star Eating a Planet



*Artist's concept of the exoplanet WASP-12b.*

Credit: NASA/ESA/G.

The hottest known planet in the Milky Way galaxy may also be its shortest-lived world. The doomed planet is being eaten by its parent star, according to observations made by a new instrument on NASA's Hubble Space Telescope, the Cosmic Origins Spectrograph (COS). The planet may only have another 10 million years left before it is completely devoured.

The planet, called WASP-12b, is so close to its sunlike star that it is superheated to nearly 2,800 degrees Fahrenheit and stretched into a football shape by enormous tidal forces. The atmosphere has ballooned to nearly three times Jupiter's radius and is spilling material onto the star. The planet is 40 percent more massive than Jupiter.

This effect of matter exchange between two stellar objects is commonly seen in close binary star systems, but this is the first time it has been seen so clearly for a planet.

"We see a huge cloud of material around the planet, which is escaping and will be captured by the star. We have identified chemical elements never before seen on planets outside our own solar system," says team leader Carole Haswell of The Open University in Great Britain.

Haswell and her science team's results were published in the May 10, 2010 issue of *The Astrophysical Journal Letters*.

A theoretical paper published in the science journal *Nature* last February by Shu-lin Li of the Department of Astronomy at the Peking University, Beijing, first predicted that the planet's surface would be distorted by the star's gravity, and that gravitational tidal forces make the interior so hot that it greatly expands the planet's outer atmosphere. Now Hubble

has confirmed this prediction.

WASP-12 is a yellow dwarf star located approximately 600 light-years away in the winter constellation Auriga. The exoplanet was discovered by the United Kingdom's Wide Area Search for Planets (WASP) in 2008. The automated survey looks for the periodic dimming of stars from planets passing in front of them, an effect called transiting. The hot planet is so close to the star it completes an orbit in 1.1 days.

The unprecedented ultraviolet (UV) sensitivity of COS enabled measurements of the dimming of the parent star's light as the planet passed in front of the star. These UV spectral observations showed that absorption lines from aluminum, tin, manganese, among other elements, became more pronounced as the planet transited the star, meaning that these elements exist in the planet's atmosphere as well as the star's. The fact the COS could detect these features on a planet offers strong evidence that the planet's atmosphere is greatly extended because it is so hot.

The UV spectroscopy was also used to calculate a light curve to precisely show just how much of the star's light is blocked out during transit. The depth of the light curve allowed the COS team to accurately calculate the planet's radius. They found that the UV-absorbing exosphere is much more extended than that of a normal planet that is 1.4 times Jupiter's mass. It is so extended that the planet's radius exceeds its Roche lobe, the gravitational boundary beyond which material would be lost forever from the planet's atmosphere.

## Phoenix Mars Lander is Silent, New Image Shows Damage

PASADENA, Calif. -- NASA's Phoenix Mars Lander has ended operations after repeated attempts to contact the spacecraft were unsuccessful. A new image transmitted by NASA's Mars Reconnaissance Orbiter shows signs of severe ice damage to the lander's solar panels.

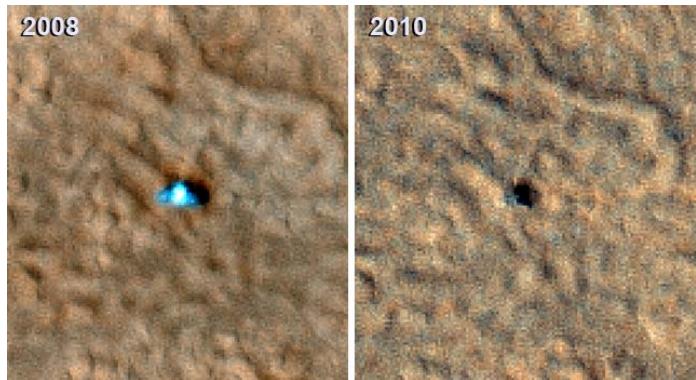
"The Phoenix spacecraft succeeded in its investigations and exceeded its planned lifetime," said Fuk Li, manager of the Mars Exploration Program at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "Although its work is finished, analysis of information from Phoenix's science activities will continue for some time to come."

Last week, NASA's Mars Odyssey orbiter flew over the Phoenix landing site 61 times during a final attempt to communicate with the lander. No transmission from the lander was detected. Phoenix also did not communicate during 150 flights in three earlier listening campaigns this year.

Earth-based research continues on discoveries Phoenix made during summer conditions at the far-northern site where it landed May 25, 2008. The solar-powered lander completed its three-month mission and kept working until sunlight waned two months later.

Phoenix was not designed to survive the dark, cold, icy winter. However, the slim possibility Phoenix survived could not be eliminated without listening for the lander after abundant sunshine returned.

An image of Phoenix taken this month by the High Resolution Imaging Science Experiment, or HiRISE, camera on board the Mars Reconnaissance Orbiter suggests the lander no longer casts shadows the way it did during its working lifetime.



*Two images of the Phoenix Mars lander taken from Martian orbit in 2008 and 2010. The 2008 lander image shows two relatively blue spots on either side corresponding to the spacecraft's clean circular solar panels. In the 2010 image scientists see a dark shadow that could be the lander body and eastern solar panel, but no shadow from the western solar panel.*

*Image credit: NASA/JPL-Caltech/University of Arizona*

"Before and after images are dramatically different," said Michael Mellon of the University of Colorado in Boulder, a science team member for both Phoenix and HiRISE. "The lander looks smaller, and only a portion of the difference can be explained by accumulation of dust on the lander, which makes its surfaces less distinguishable from surrounding ground."

Apparent changes in the shadows cast by the lander are consistent with predictions of how Phoenix could be damaged by harsh winter conditions. It was anticipated that the weight of a carbon-dioxide ice buildup could bend or break the lander's solar panels. Mellon calculated hundreds of pounds of ice probably coated the lander in mid-winter.

During its mission, Phoenix confirmed and examined patches of the widespread deposits of underground water ice detected by Odyssey and identified a mineral called calcium carbonate that suggested occasional presence of thawed water. The lander also found soil chemistry with significant implications for life and observed falling snow. The

mission's biggest surprise was the discovery of perchlorate, an oxidizing chemical on Earth that is food for some microbes and potentially toxic for others.

"We found that the soil above the ice can act like a sponge, with perchlorate scavenging water from the atmosphere and holding on to it," said Peter Smith, Phoenix principal investigator at the University of Arizona in Tucson. "You can have a thin film layer of water capable of being a habitable environment. A micro-world at the scale of grains of soil -- that's where the action is."

The perchlorate results are shaping subsequent astrobiology research, as scientists investigate the implications of its antifreeze properties and potential use as an energy source by microbes. Discovery of the ice in the uppermost soil by Odyssey pointed the way for Phoenix. More recently, the Mars Reconnaissance Orbiter detected numerous ice deposits in middle latitudes at greater depth using radar and exposed on the surface by fresh impact craters.

"Ice-rich environments are an even bigger part of the planet than we thought," Smith said. "Somewhere in that vast region there are going to be places that are more habitable than others."

The Mars Reconnaissance Orbiter reached the planet in 2006 to begin a two-year primary science mission. Its data show Mars had diverse wet environments at many locations for differing durations during the planet's history, and climate-change cycles persist into the present era. The mission has returned more planetary data than all other Mars missions combined.

Odyssey has been orbiting Mars since 2001. The mission also has played important roles by supporting the twin Mars rovers Spirit and Opportunity. The Phoenix mission was led by Smith at the University of Arizona, with project management at JPL and development partnership at Lockheed Martin in Denver. The University of Arizona operates the HiRISE camera, which was built by Ball Aerospace and Technologies Corp., in Boulder. Mars missions are managed by JPL for NASA's Mars Exploration Program at NASA Headquarters in Washington. JPL is a division of the California Institute of Technology in Pasadena.

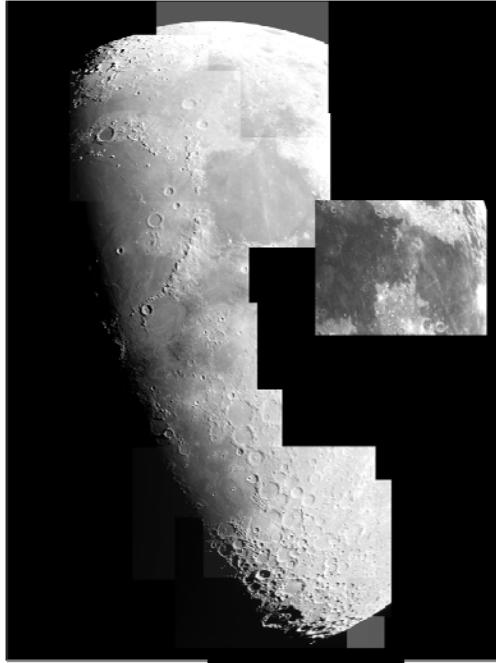
For Phoenix information and images, visit:  
<http://www.nasa.gov/phoenix>.

## In the Eyepiece

Here is a list of objects for this month. This is reproduced from [www.skyhound.com](http://www.skyhound.com) with the kind permission of its creator and author of SkyTools Greg Crinklaw.

Object(s)	Class	Con	RA	Dec	Mag
Mu Boo	Multiple Star System	Bootes	15h24m30.9s	+37°22'38"	4.3+7.2
M5	Globular Cluster	Ser	15h18m15.4s	+02°05'00"	5.7
NGC 5897	Globular Cluster	Libra	15h17m24.0s	-21°03'26"	8.4
NGC 6207	Galaxy	Hercules	16h43m03.9s	+36°49'58"	12.1
NGC 6144	Globular Cluster	Scorpius	16h27m14.0s	-26°01'18"	9
NGC 6210	Planetary Nebula	Hercules	16h44m29.5s	+23°47'59"	9.3
A 39	Planetary Nebula	Hercules	16h27m33.9s	+27°54'29"	13.7
The Rumped Starfish (NGC 6240)	Interacting Galaxy	Ophiuchus	16h52m59.0s	+02°24'02"	13.8
Me 2-1	Planetary Nebula	Libra	15h22m18.6s	-23°37'35"	11.6

Coordinates are epoch 2000.0



This photomontage of our moon was created by STAR's own Dave Britz using a monochrome video camera, a frame grabber, and a lot of patience!

## 2010 June Celestial Events

supplied by J. Randolph Walton (Randy)

Day	Date	Time (EDT)	Event
Fri	4	12:42	Moon Set
Sat	5	00:55	Mars Sets
		01:15	Moon Rise
		02:05	Jupiter Rises
		02:15	Saturn Sets
		04:30	Mercury Rises
		05:32	Sunrise
		20:25	Sunset
		23:03	Venus Sets
Thu	10	18:00	Moon 0.6 deg. S of Pleiades (M45)
Sat	12	00:40	Mars Sets
		01:45	Jupiter Rises
		01:50	Saturn Sets
		04:35	Mercury Rises
		21:02	Moon Set
		23:05	Venus Sets
Sat	19	00:20	Mars Sets
		01:15	Jupiter Rises
		01:20	Saturn Sets
		04:50	Mercury Rises
		05:31	Sunrise
		13:45	Moon Rise
		20:32	Sunset
		23:03	Venus Sets
Sun	20	23:00	Lunar Straight Wall visible
Mon	21	07:29	Summer Solstice
Sat	26	00:02	Mars Sets
		00:45	Jupiter Rises
		00:47	Saturn Sets
		05:20	Mercury Rises
		05:30	Moon Set
		06:16	Partial Lunar Eclipse begins (parts visible West of Indiana)
		05:33	Sunrise
		20:33	Sunset
		20:55	Moon Rise
		22:55	Venus Sets
Sat	Jul 3	0020	Jupiter Rises
		00:22	Saturn Sets
		05:36	Sunrise
		12:28	Moon Set
		20:32	Sunset
		21:03	Mercury Sets
		22:53	Venus Sets
		23:40	Mars Sets