



THE OBSERVER

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member THE ASTRONOMICAL LEAGUE

"Celebrating Forty-Seven Years of Amateur Astronomy"

VOLUME #47 ISSUE #05

May 2005

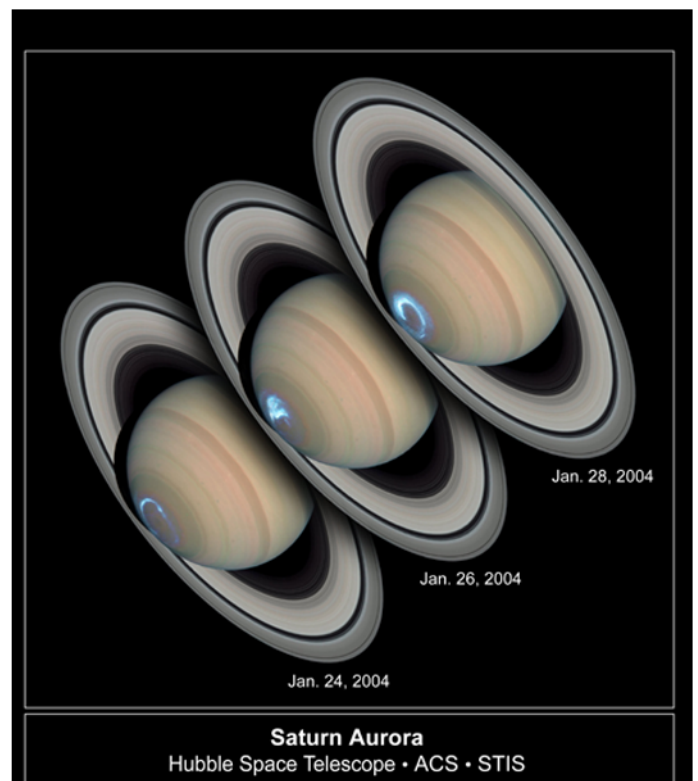
Astro Video will be shown Discussion of RTMC

Saturn's Auroras Defy Scientists' Expectations

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Release Date: 2:00PM (EST) February 16, 2005

See the full press release story on page seven (7) of the color PDF Observer newsletter.



MEETING: May 21, 2005--7:00PM

"Bring Scopes for Lunar and Planetary Observing"

SAN BERNARDINO COUNTY MUSEUM

CALIFORNIA STREET EXIT FROM INTERSTATE 10

PRE-MEETING DINNER: 5:30PM HOMETOWN BUFFET, LOMA LINDA

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SBVAA

CALENDER OF EVENTS 2005

Meetings held at the
 San Bernardino County Museum
 For information, call Chris Clarke at (909)
 888-6511, ex.1458

May 21.....Meeting (3rd Saturday)
 June 4..... Star Party (2 days before
 new moon)
 June 18.....Meeting (3rd Saturday)
 July 9.....Star Party (Grandview-3
 day old moon)
 July 16.....Meeting (3rd Saturday)
 August 6.....Star Party (new moon)
 August 20.....Club Barbecue (3rd Sat)

May Meeting

RTMC will be one of the topics covered during the club meeting. The Johnson Valley and Grandview star parties will also be discussed. After the conclusion of club business,an Astro-Video will be shown at the club meeting.

Michelle Krok, a club member, announces her upcoming internships.

“I should let you know- this past week I found out some of my future plans. This summer I will be participating in a paid internship under an astrophysics professor studying cosmology- one of my top fave subjects in astronomy! In the fall I will be doing an internship in Washington D.C. through the UC system with some government organization, hopefully doing space education. I would like to go through the Smithsonian, but I know the NASA History Office is already interested in me, so we'll see!”
 Michelle

CLASSIFIEDS FOR MEMBERS

**Classified Ads are Free
to all members.**

**Please keep the ads short.
Before the Submission Deadline,
send all ad copy to the
SBVC Planetarium,
701 S. Mt. Vernon Ave,
San Bernardino, CA 92410
or e-mail Newsletter Editor at:
WSMyer@aol.com**

President's Message

Jerry L. Day

Jerry_day@eee.org

Another month has flown by and we're now well into the spring season and even starting to experience a few days of very warm summer-like weather. Although we've been enjoying the nice balmy spring weather, good dark sky conditions have proven elusive for our recent outings.

The last star party was scheduled for Saturday, May 7, at the Owl Canyon campground site in Rainbow Basin Natural Area, however, once again the weather failed to cooperate. Although the day dawned clear and promising, conditions had deteriorated by sunset with high hazy clouds and windy conditions settling in, forcing cancellation of the star party.

Looking ahead, the next star party will be held Saturday, June 4, at the Johnson Valley site. Perhaps we'll finally have some nice clear skies by then!

At least poor weather was not a factor for the annual NASA Jet Propulsion Laboratory (JPL) Open House event that was held the following weekend, Saturday and Sunday, May 14 and 15, in Pasadena. A number of our club members made the annual trek to JPL to share in "Spirit of Exploration" and to enjoy a behind-the-scenes look at the exciting NASA and JPL missions to explore the Earth, the solar system, and the wider universe. Visitors also viewed exciting presentations about the ongoing Mars Rover missions and the Cassini-Huygens mission to Saturn, as well as the upcoming Deep Impact mission to a comet.

If you've never visited the JPL Open House, you've missed out on a wonderful experience, so be sure to mark you calendars for next year's event!

We're also approaching the time for the first of our two annual trips to Grandview, a premier dark sky site in the Ancient Bristlecone Pine National Forest, near Big Pine, California. This year, due to timing of the new Moon dates, the Grandview star party will be held later than usual, the weekend of July 8-9. Still, not too early to mark your calendar and start planning for what can be a fantastic observing experience.

Finally, the 37th annual Riverside Telescope Makers Conference (RTMC) and Astronomy Exposition will be held this Memorial Day weekend, Friday, May 27, through Sunday, May 29, 2005. RTMC is held at the YMCA Camp Oaks, five miles southeast of Big Bear City on State Route 38 at Lake Williams Road between mileposts 44 and 45.

The theme for this year's RTMC is "The History of Astronomy". In keeping with the history theme, the scheduled keynote speakers, Los Angeles documentary filmmakers Todd and Robin Mason, will present "Palomar's 200-inch Telescope: The Impossible Challenge". The Masons have been busy the past five years working on a PBS documentary entitled "The Journey to Palomar", about George Ellery Hale's world famous telescopes at Yerkes, Mount Wilson and Palomar observatories. This will surely be a fascinating presentation!

Those of you attending the RTMC for the first time can look forward to other great presentations on astronomy and astro-imaging – no matter what your level of expertise, you'll find something of interest. You can also look forward to some great bargains on telescope equipment and accessories at the vendor's exhibits or at the swap meet. Also of interest are astro-imaging contest, the telescope making contest, evening door prize drawings, and the nightly star parties. Be prepared to make many new friends and to have some great fun! See you there.

Clear skies.

RTMC Astronomy EXPO
May 27-30, 2005
Camp Oaks, Big Bear, CA

DAY USE
per person.....\$15.00
after May 1st...\$20.00

Questions...
(909) 948-2205
<http://www.rtmcastronomyexpo.org>

MARS ROVERS UPDATES

SPIRIT UPDATE: Spirit Observing 'Reef' - sol 477-482, May 17, 2005

Spirit remains in excellent health. On sols 477, 478 and 479 (May 7 to May 9, 2005), Spirit made observations with remote-sensing instruments and analyzed soil targets with its alpha particle X-ray spectrometer and Mössbauer spectrometer. Spirit then performed a short drive to a target called "Keel," on the outcrop called "Jibsheet." On sol 481, Spirit was able to begin observing a target called "Reef," using the microscopic imager and performing a 16-hour integration with the alpha particle X-ray spectrometer. On sol 482 (May 12), Spirit continued work on Reef with instruments on the robotic arm, and performed a 21-hour integration with the Mössbauer spectrometer. Spirit's total odometry as of May 12, 2005, is 4,341.19 meters (2.70 miles).

OPPORTUNITY UPDATE: Stuck?? 06-May-2005

This mosaic of navigation-camera frames from NASA's Mars Exploration Rover Opportunity, presented in a vertical projection, shows the rover's position after it dug itself to wheel-hub depth in a small dune during its 446th martian day, or sol (April 26, 2005). The elongated dune, or ripple, is about one-third of a meter (one foot) tall and 2.5 meters (8 feet) wide.

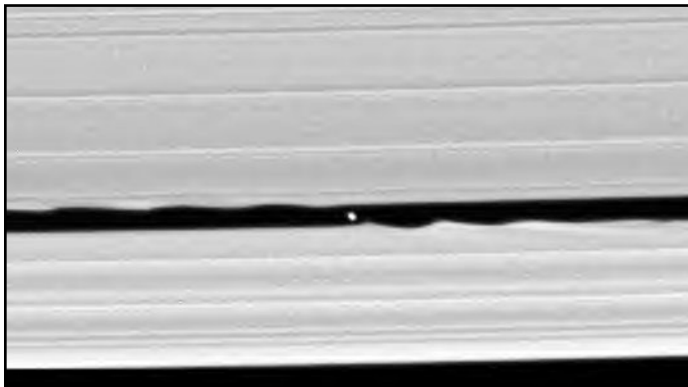
Opportunity had completed nearly 40 meters (131 feet) of a planned 90-meter (295-foot) drive that sol when its wheels began slipping. The rover was driving backwards at the time. The rover team frequently alternates between backwards and forwards driving to keep wheel lubrication well distributed. The wheels kept rotating enough times to have covered the rest of the distance if they hadn't been slipping, but the rover eventually barely inched forward. After a turn at the end of the planned drive, Opportunity sensed that it had not turned properly and stopped moving.

The rover team spent more than a week designing and conducting tests under simulated Mars conditions on Earth before choosing the best way for Opportunity to drive out of the dune. Image credit: NASA/JPL



Look down view of the rover

CASSINI-HUYGENS UPDATES



Wavemaker Moon May 10, 2005

Cassini's confirmation that a small moon orbits within the Keeler gap in Saturn's rings is made all the more exciting by this image, in which the disk of the 7 kilometer-wide body (4-miles) is resolved for the first time.

The new body, provisionally named S/2005 S1, was first seen in a time-lapse sequence of images taken on May 1, 2005, as Cassini began its climb to higher elevations in orbit around Saturn. This view was acquired one day after the discovery sequence of images and has allowed scientists to measure the moon's size and brightness.

In the vicinity of the little moon, the Keeler gap edges bear striking similarities to the scalloped edges of the 322 kilometer-wide (200-mile) Encke gap, where the small moon Pan (25 kilometers, or 16 miles across) resides. From the size of the waves seen in the scalloped edges of the Encke gap, imaging scientists were able to estimate the mass of Pan. They expect to do the same eventually with S/2005 S1.

This image was obtained with the Cassini spacecraft narrow-angle camera on May 2, 2005, at a distance of about 594,000 kilometers (369,000 miles) from Saturn. Cassini was about 525,000 kilometers (326,000 miles) above the ringplane when the image was taken. NASA/JPL/Space Science Institute

Outreaches! Fun for All!!

By Chris Clarke, Outreach Coordinator

Over the past few months, the club was able to have some successful outreaches. Although a few were clouded out, others went very well. The visit to West Riverside Elementary School in Rubidoux was packed with kids and parents—about 250 of them! Even though thick high clouds started rolling in early, we were able to share views of Saturn and the moon for much of the time. People were simply amazed at how three-dimensional Saturn appeared. Jerry Day, John Simpson, Rudy Rodriguez, Martin Carey, David Morris, Fidel Hernandez (and a few other members I can't recall) came down to make this a memorable event for the children.

Our "Saturn Party" at the Museum had perfect weather and seeing, so the 120 or more folks who attended were able to have incredible views of the ringed planet. Several scopes were set up, and the biggest was Fidel Hernandez's 1953 vintage 6-inch Carroll Refractor (complete with a few cobwebs—time to 'spring clean' your mount, Fidel), providing stunning views. Steve Miller's 'dob' gave some awesome views, too—it is one of the best mirrors in the club. Added to the night's collection were my 3-1/2-inch Questar, Tom Lawson's C5 (with a newly refinished wooden tripod—really slick, Tom—thanks to John Canino's fine work!), Martin's maksutov-cassegrain (always a crowd pleaser), Pam Smyth's 90mm refractor and another scope belonging to new member, Debbie Cochran. A couple of visitors even brought their scopes to share, too!

We also had a free raffle of lots of little NASA/JPL "good-

ies" that Steve Weaver and I provided; almost everyone there got something. Also, a reporter from the Redlands Daily Facts was on hand to interview members and visitors, and a very nice feature article later appeared in the paper. Following the 'party,' several members had a pleasant gathering at Coco's.

Over at Mentone School, we saw at least one hundred people who really enjoyed seeing the moon, Saturn and Jupiter. Mike Klein's 12-inch Meade and video setup was the highlight, along with great views through Fidel's 6-inch Carroll refractor (still with cobwebs!). A few other nice scopes brought by cheerful volunteers rounded out the pleasant evening that had comfortable shirt sleeve weather. Our hosts provided us with bottled water, cookies and oranges, too!

Astronomy Day at the Museum brought out many new faces for the club meeting and telescope viewing afterwards. About 85 people were on hand to hear our guest speaker, Gary Peterson, speak about the changing climate of Mars and to see a beautiful first-quarter moon, sensational Saturn and awesome Jupiter. Several members had scopes to share. We had another raffle, with nearly everyone getting some sort of NASA goodie.

All in all, everyone truly enjoyed themselves at these events and almost 600 people had a first-hand experience at seeing something new and different. My heartfelt thanks go to the volunteers who took the time and made the effort to come out and share their scopes with the public. You folks have contributed something that is very special and unforgettable for the people who have no other way to experience the universe directly.

An Invitation To Join

The San Bernardino Valley Amateur Astronomers

- Monthly Meetings/Speakers
- Monthly Star Party
- The Observer Newsletter
- Learn about Astronomy
- Learn about Telescopes
- Learn about Astrophotography

Fill out and mail this form along with \$30.00 Annual Membership Fee. Add an additional \$33.00 to include a one (1) year subscription to "Sky and Telescope" magazine and or \$29.00 for one (1) year subscription to "Astronomy" Magazine.

Make check payable to: San Bernardino Valley Amateur Astronomers.

Mail to: **Fidel Hernandez, SBVAA Treasurer,
27799 21st St, Highland, CA, 92346**

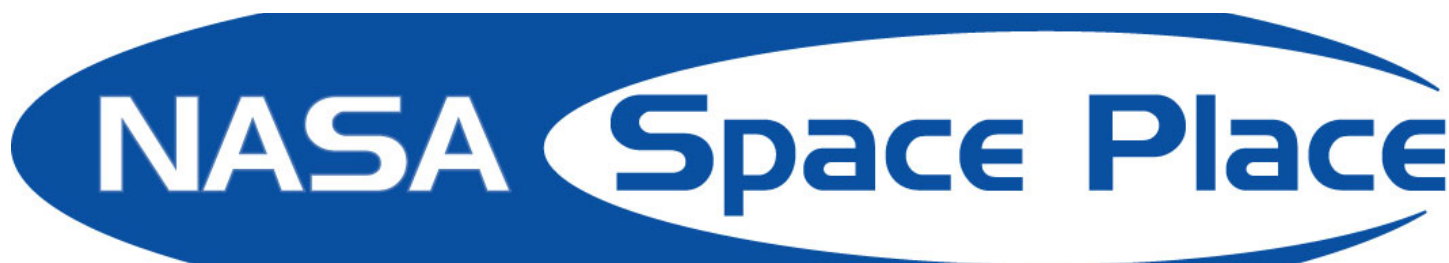
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Seeing in the Dark with Spitzer

by Patrick Barry and Tony Phillips

Have you ever gotten up in the middle of the night, walked to the bathroom and, in the darkness, tripped over your dog? A tip from the world of high-tech espionage: next time use night-vision goggles.

Night vision goggles detect heat in the form of infrared radiation—a "color" normally invisible to the human eye. Wearing a pair you can see sleeping dogs, or anything that's warm, in complete darkness.

This same trick works in the darkness of space. Much of the exciting action in the cosmos is too dark for ordinary telescopes to see. For example, stars are born in the heart of dark interstellar clouds. While the stars themselves are bright, their birth-clouds are dense, practically impenetrable. The workings of star birth are thus hidden.

That's why NASA launched the Spitzer Space Telescope into orbit in 2003. Like a giant set of infrared goggles, Spitzer allows scientists to peer into the darkness of space and see, for example, stars and planets being born. Dogs or dog stars: infrared radiation reveals both.

There is one problem, though, for astronomers. "Infrared telescopes on the ground can't see very well," explains Michelle Thaller, an astronomer at the California Institute of Technology. "Earth's atmosphere blocks most infrared light from above. It was important to put Spitzer into space where it can get a clear view of the cosmos."

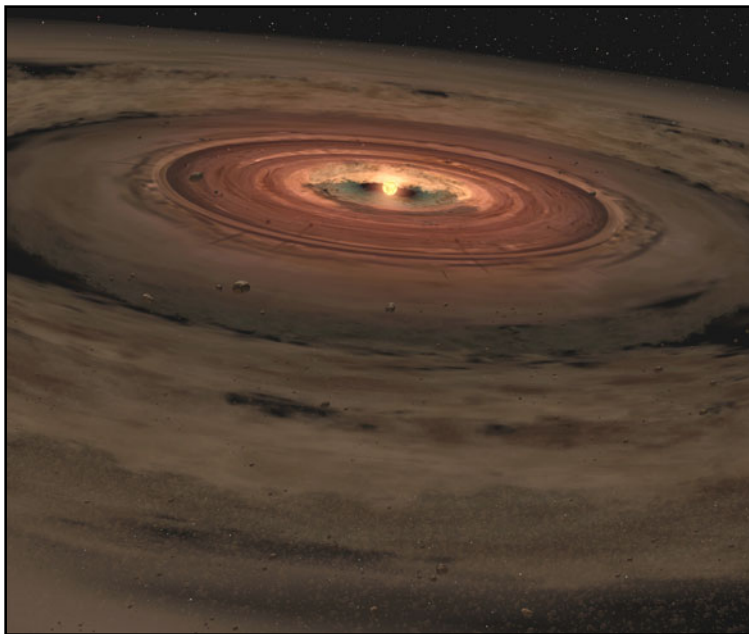
The clear view provided by Spitzer recently allowed scientists to make a remarkable discovery: They found planets coalescing out of a disk of gas and dust that was circling—not a star—but a "failed star" not much bigger than a planet! Planets orbiting a giant planet?

The celestial body at the center of this planetary system, called OTS 44, is only about 15 times the mass of Jupiter. Technically, it's considered a "brown dwarf," a kind of star that doesn't have enough mass to trigger nuclear fusion and shine. Scientists had seen planetary systems forming around brown dwarfs before, but never around one so small and planet-like.

Spitzer promises to continue making extraordinary discoveries like this one. Think of it as being like a Hubble Space Telescope for looking at invisible, infrared light. Like Hubble, Spitzer offers a view of the cosmos that's leaps and bounds beyond anything that came before. Spitzer was designed to operate for at least two and a half years, but probably will last for five years or more.

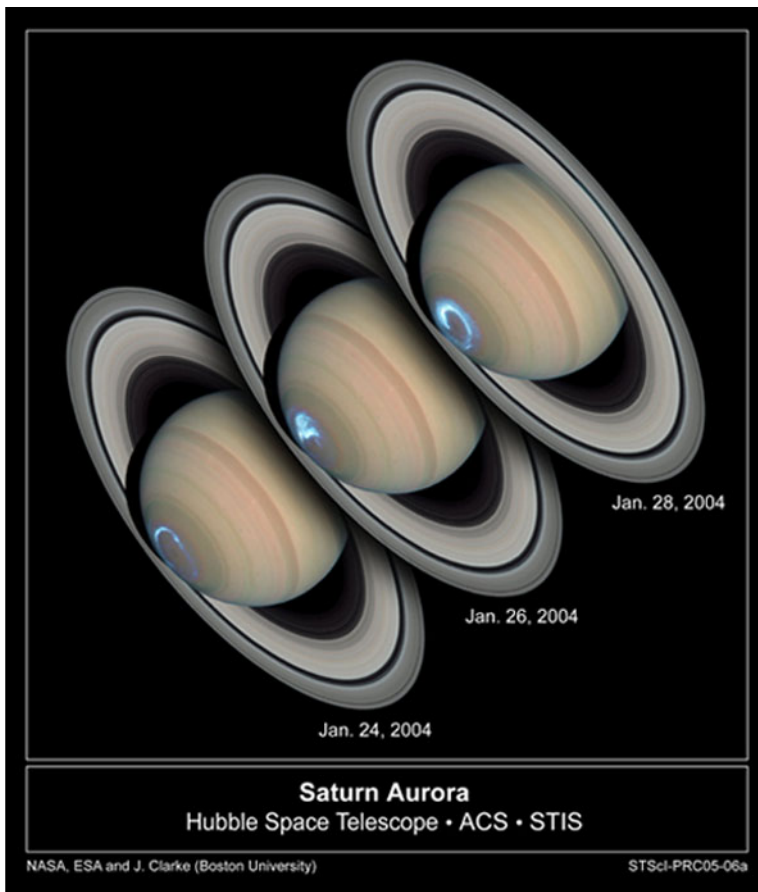
For more about Spitzer and to see the latest images, go to <http://www.spitzer.caltech.edu/spitzer>. Kids and grown-ups will enjoy browsing common sights in infrared and visible light at the interactive infrared photo album on The Space Place, http://spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml.

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



Artist's rendering of brown dwarf OTS44 with its rotating planetary disk.

Saturn's Auroras Defy Scientists' Expectations



The dancing light of the auroras on Saturn behaves in ways different from how scientists have thought possible for the last 25 years. New research by a team of astronomers led by John Clarke of Boston University has overturned theories about how Saturn's magnetic field behaves and how its auroras are generated. Their results will be published in the February 17 issue of the journal *Nature*.

By choreographing the instruments aboard the Earth-orbiting Hubble Space Telescope and the Cassini spacecraft, while it was enroute to Saturn, to look at Saturn's southern polar region, Clarke and his team found that the planet's auroras, long thought of as a cross between those of Earth and Jupiter, are fundamentally unlike those observed on either of the other two planets. The ruby-colored lights that occasionally paint the sky over Saturn may, in fact, be a phenomenon unique within our solar system.

In Clarke's experiment, Hubble snapped ultraviolet pictures of Saturn's auroras over several weeks and Cassini recorded radio emissions from the same regions while measuring the solar wind, a stream of charged particles that trigger auroras. Those sets of measurements were combined to yield the most accurate glimpse yet of Saturn's auroras.

The observations showed that Saturn's auroras differ in character from day to day, as they do on Earth, moving around on some days and remaining stationary on others. But compared with Earth, where auroras last only about 10 minutes, Saturn's

auroras can last for days.

The observations also indicated, surprisingly, that the sun's magnetic field and solar wind may play a much larger role in Saturn's aurora than previously suspected. Hubble images, when combined with Cassini measurements of the solar wind, show that it is the pressure of the solar wind that appears to drive auroral storms on Saturn. In Earth's case, it is mainly the sun's magnetic field, carried in the solar wind, that drives auroral storms.

Seen from space, an aurora appears as a ring of light circling a planet's polar region, where magnetic poles typically reside. Auroral displays are initiated when charged particles in space collide with a planet's magnetic field and stream into the upper atmosphere. Collisions with gases in the planet's atmosphere produce flashes of glowing energy in the form of light and radio waves.

Scientists had long believed Saturn's auroras possess properties akin to both Earth and Jupiter. Like Earth's, they were thought to be influenced by the solar wind. Like Jupiter's, they were assumed to be influenced by a ring of ions and charged particles encircling the planet. The new results do show, however, a feature of Saturn's aurora that matches Earth's: Radio waves appear to be tied to the brightest auroral spots. This similarity suggests that the physical processes that generate these radio waves is just like those of Earth.

But, as the team observed, though Saturn's auroras do share characteristics with the other planets, they are fundamentally unlike those on either Earth or Jupiter. When Saturn's auroras become brighter (and thus more powerful), the ring of energy encircling the pole shrinks in diameter. When Earth's auroras become brighter, the polar region for several minutes is filled with light. Then the ring of light dims and begins to expand. Jupiter's auroras, however, are only weakly influenced by the solar wind, becoming brighter about once a month, at the most, in response to solar wind changes.

Saturn's auroral displays also become brighter on the sector of the planet where night turns to day as the storms increase in intensity, unlike either of the other two planets. At certain times, Saturn's auroral ring was more like a spiral, its ends not connected as the energy storm circled the pole.

Now that Cassini has entered orbit around Saturn, Clarke and his team will be able to take a more direct look at the how the planet's auroras are generated. According to Clarke, the team will next probe how the sun's magnetic field may fuel Saturn's auroras and what role the solar wind may play. Release Date: 2:00PM (EST) February 16, 2005

SBVAA Star Party at Johnson Valley

Star Party: June 4th, 2005

See Tom Lawson, Star Party Coordinator

**Astro Video will be shown
Discussion of RTMC**

Meeting: May 21, 2005–7:00PM

“Bring Scopes for Lunar and Planetary Observing”

SAN BERNARDINO COUNTY MUSEUM

2024 ORANGE TREE LANE, REDLANDS, CA

CALIFORNIA STREET EXIT FROM INTERSTATE 10

PRE-MEETING DINNER: 5:30PM, HOMETOWN BUFFET, LOMA LINDA



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