

Sonoma Skies

Newsletter of the Sonoma County Astronomical Society
A nonprofit scientific and educational organization

www.sonomaskies.org



June 2005

Volume XXVIII No. 5

Ancient Astronomy, the First Science

SCAS June 8 Meeting, Proctor Terrace School

“When Sir Isaac Newton and early ‘modern’ scientists said that if they saw farther it was only because they stood on the shoulders of giants, it was ancient Greeks they were referring to. And the pinnacle of ancient Greek science was the amazingly sophisticated astronomy developed more than 2000 years ago at the legendary Museum of Alexandria.” Thus does John Dillon, our next guest speaker, introduce his subject for the program at the June meeting.

John Dillon brings to us his examination of how astronomy became a science from his long study of the history and philosophy of science. He still studies it, even though he describes himself as “semiretired” as the Curator of Natural Science at the Randall Museum in San Francisco and lecturer at the California Academy of Sciences. He is also currently president of the San Francisco Amateur Astronomers. Come hear what he has to say about the first astronomers of ancient Greece.



This picture from a 15th Century book shows Ptolemy using an astrolabe.

Of course, the collective mind of Western culture owes a great debt to what we call Classical Greek culture. The florescence of society that occurred there over 2000 years ago laid the foundations for much of what we call civilization. Democracy, philosophy, rhetoric, art and architecture as well as science reached a pinnacle that still defines the Western world. Although the Greeks could be warriors, they were open to adopting ideas from other peoples, even their enemies. They collected these ideas, examined them, and built upon them.

It's Membership Renewal Time!

As you know, membership in the SCAS is renewable June 1 for the 2005-06 membership year. That day has passed.

Please use the renewal form on the back cover to update your address, email and telephone information and send your check for \$25 (payable to SCAS) to: SCAS Membership, P.O. Box 183, Santa Rosa, CA 95402-0183. Avoid annoying reminders. Thank you!

From the mists of prehistoric myths and stories of the Macedonians, Persians, Egyptians, and themselves, they sought to bring to light an understanding of humanity and their place in the world around them.

Some of these myths found their way into the stars. Many of the constellations we know today trace their stories to the legends that the Greeks identified themselves with. From these mythic tales the ancients saw celestial events wandering among their heroes. Planets, eclipses, comets, meteors and other cosmic things seemed to portray stories relevant to themselves in their time. Astrologers sought to advise and seek counsel in the tidings they believed these to mean to them, especially to their rulers. It became important for them to observe, and measure these events. From their superstition came real observations of cosmic cycles.

At Alexandria in Egypt, the Greeks sought to amass a center of learning. Ptolemy sought to observe, compile, and work to predict the patterns he saw in the heavens. Eratosthenes sought to measure the world the Greeks knew. From works like these, mathematics was created as a tool to describe these cosmic workings. So it can be truthfully said that astronomy, the observation and measurement of the stars and the earth, became the first fire to ignite the scientific mind, the birth of modern science.

Come listen to John Dillon weave his scholarly account as he takes us back to our roots as astronomers. Join us at the next SCAS meeting, Wednesday June 8, 7:30 PM. Togas and laurel wreaths not required! —*John Whitehouse*

Young Astronomers: See page 6

Sonoma Skies

Sonoma Skies is the monthly newsletter of the **Sonoma County Astronomical Society (SCAS)**. Subscription is included as part of membership. Articles and member announcements are welcome and are published on a first come, first served basis, space permitting, and may be edited. **The deadline for submissions is the last Wednesday of each month.** Mail to: Editor, SCAS, P.O. Box 183, Santa Rosa, CA 95402, or email Editor: Cecelia Yarnell, ceceliay@sbcglobal.net

SCAS Membership Information

MEMBERSHIP MEETINGS: 7:30 PM on the second Wednesday of each month, in the Multipurpose Room of Proctor Terrace Elementary School on Bryden Lane near Fourth Street in Santa Rosa, unless otherwise announced in this publication. The public is invited.

DUES: \$25, renewable June 1 of each year. New members joining between December 1 and May 31 may pay partial-year dues of \$12.50.

SCAS STAR PARTIES: See the Events section for dates and times. The Geysers observing site is locked to public access. For use during monthly star parties, SCAS members may obtain the combination to the gate lock at the site by contacting any board member listed below.

RENTAL TELESCOPES: Members are eligible to borrow telescopes for a \$10 per month donation, or **FREE** each month you participate in a SCAS-related Public Star Party. Five telescopes are available: 8" and 5" Celestron SCTs, 8" and 12.5" Newtonians on Dobsonian mounts; and an 80mm refractor. Contact Joan Thornton at 707-762-0594.

SCAS EGROUP URL: Any SCAS member is welcome to join. Hosted by Robert Leyland at r.leyland@verizon.net the majority of traffic is about going observing, observing reports and astronomy-related news. We get news items from AANC and Sky & Telescope and chat about astronomy. To join, either visit <http://groups.yahoo.com/group/scas> and click the "Join" button, or send an email to scas-subscribe@yahoogroups.com

DISCOUNT SUBSCRIPTIONS: For *Sky & Telescope Magazine*, new subscribers may send a check for \$32.95 payable to "SCAS", with your complete mailing address, directly to: Larry McCune, 544 Thyme Place, San Rafael, CA 94903. For renewals, send him your check with the completed renewal card and return envelope. Discount subscriptions to *Astronomy Magazine* occur annually in October. Check **Sonoma Skies** for details.

LIBRARY: SCAS Librarian Joan Thornton hosts a library of astronomy books that may be checked out by members at SCAS meetings, to be returned at the next meeting. Videotaped lectures on astronomy may be rented for \$3 per month.

SCAS Elected Board

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Striking Sparks Program Coordinator: Dickson Yeager, 539-2385, deep6@sonic.net

Librarian: Joan Thornton, 762-0594, phonyjoanic@earthlink.net

Public Star Party Coordinator: Bruce Lotz, 576-7833, ablotz@sonic.net

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NASA SCIENTISTS SOLVE MARS SOUTH POLE MYSTERY

NASA scientists have solved an age-old mystery by finding that Mars' southern polar cap is offset from its geographical south pole because of two different polar climates.

Weather generated by the two martian regional climates creates conditions that cause the red planet's southern polar ice to freeze out into a cap whose center lies about 93 miles (150 kilometers) from the actual south pole, according to a scientific paper included in the May 12 issue of the journal, *Nature*.



"Mars' permanent south polar cap is offset from its geographic south pole, which was a mystery going back to the first telescopic observations of Mars," said the paper's lead author, Anthony Colaprete, a space scientist from NASA Ames Research Center, located in California's Silicon Valley. "We found that the offset is a result of two martian regional climates, which are on either side of the south pole," he said.

The scientists found that the location of two huge craters in the southern hemisphere of Mars is the root cause of the two distinct climates. "The two craters' unique landscapes create winds that establish a low pressure region over the permanent ice cap in the western hemisphere," Colaprete explained.

Just as on Earth, low-pressure weather systems are associated with cold, stormy weather and snow. "On Mars, the craters anchor the low pressure system that dominates the southern polar ice cap, and keep it in one location," Colaprete said.

According to the scientists, the low-pressure system results in white fluffy snow, which appears as a very bright region over the ice cap. In contrast, the scientists also report that 'black ice' forms in the eastern hemisphere, where martian skies are relatively clear and warm. "The eastern hemisphere of the south pole region gets very little snow, and clear ice forms over the martian soil there," Colaprete said. Black ice forms when the planet's surface is cooling, but the atmosphere is relatively warm, according to scientists. "A similar process occurs on Earth when black ice forms over highways," Colaprete explained.

Colaprete's coauthors include Jeffrey Barnes, Oregon State University, Corvallis; Robert Haberle, also of NASA Ames; Jeffery Hollingsworth, San Jose State University Foundation, NASA Ames; and Hugh Kieffer and Timothy Titus, both from the U.S. Geological Survey, Flagstaff, Ariz.

SOCIAL AMENITIES

Thanks to Judie Coleman for providing fried chicken, desserts and great hors d'oeuvres at the May SCAS meeting. Delicious surprises! September remains open, so if you'd like to volunteer please call or email Cecelia Yarnell.

A DOZEN NEW MOONS FOUND ORBITING SATURN

by Robert Davis

A dozen small moons have been discovered orbiting Saturn, bringing that planet's total known count to 46. The discoveries were made with Japan's Subaru telescope in Hawaii in an ongoing project led by David Jewitt at the University of Hawaii.

The moons are estimated to range in diameter from 2 to 4 miles (3 to 7 kilometers). They are provisionally named S/2004-S7 through S/2004-S18. All but one of them orbits Saturn in the opposite direction of the planet's spin. This retrograde motion, as it is called, is common of small moons around the outer planets and indicates the rocky objects may be captured asteroids, scientists say. The number of known moons in our solar system has jumped dramatically in recent years as various teams have employed new technologies to find them. Researchers expect there are hundreds and possibly thousands more, depending on how small an object should be considered a moon. The discoveries were made last December and announced May 6. As of now, Jupiter has 63 known moons, Uranus has 27, and 13 have been found around Neptune. Mars has two moons and Pluto one.

HERCULES, A MIGHTY PLANET

by Ralph Mansfield

SCAS members were recently informed of the Kepler Mission, a space satellite that will be launched to explore extraterrestrial space for planets, habitable or not. This will be an undertaking very different from past explorations for planets in the solar system. Although it is now some 200 years since the discovery of our largest planet, Jupiter, it is interesting to review some history of that era.

In 1801 the orbit of the planetoid Ceres was worked out by the famous mathematician, Carl Friedrich Gauss. The planetoid Pallas was discovered by Heinrich Wilhelm Olbers in 1802. Then a surprising note appeared in the London Times in May 1804, to wit: "A letter purportedly from Dr. Olbers states he has discovered a planet of immense size that he has named Hercules. By his account it is three times as large as Jupiter, and completes its orbit around the sun in 211 years at a distance of 3,047,000,000 miles from the sun. Olbers also stated he observed seven satellites, one twice the earth's size, orbiting Hercules."

In 1805, Christian Daniel Gardum, along with Johann Schroeter, a meteorologist and astronomer, told Olbers he'd perfected a scheme for predicting the weather. His method used the recent discoveries of the asteroids Ceres, Pallas and Juno. According to Gardum, these three bodies had a pervasive influence on the weather and he proceeded to forecast the weather for each day of January 1806. His predictions were all wrong but he attributed the errors to the presence of an unknown planet in opposition to the Sun. Olbers assessed Gardum as a "boring fanatic" and quite possibly the person who reported the discovery of Hercules to the London Times. No astronomer has ever confirmed sighting the fictitious Hercules.

However, there is an amazing 200-year-old "prophetic coincidence" in the original statement, "It is three times the size of Jupiter..." Compare this with Prof. Basri's April discussion at SCAS about the search for extraterrestrial planets, in which he pointed out that "most of these inferred planetary bodies are probably gas giants, bigger than Jupiter, and probably hot."

Sonoma Skies, June 2005

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by
Herb
Larsen



Ok... Umbrella cover...
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Crazy California weather!

SCOPE CITY New Member Bonus!

Scope City at 350 Bay Street, San Francisco, is offering a **\$25 merchandise discount to new members.**

Manager Sam Sweiss has supported SCAS and the Striking Sparks project by donating merchandise for the awards. He offers a huge selection of telescopes, accessories and more, and as he said to this editor, "I treat everyone at SCAS like family."



Sam Sweiss

Obtain a receipt from Walt Bodley, Membership Director, showing you have paid the \$25 SCAS membership dues. To arrange for your merchandise discount, contact Sam at 415/421-8800 or at sanfrancisco@scopecity.com

WELCOME, NEW MEMBERS!

SCAS welcomes our newest members: Angelo Ibleto, Tom Novoryta and Ron Swinhart.

A reminder to pay your dues for the 2005-06 membership year. Avoid annoying reminders — send your check right away!

Events

ROBERT H. FERGUSON OBSERVATORY

Public Viewing: Saturdays, June 4, June 25

Solar Viewing: 12:00 AM - 4:00 PM

Night Viewing: Begins 8:30 PM

Three scopes are operating: The 14-inch SCT with CCD camera in the east wing, the 8-inch refractor under the dome and the 24-inch Dobsonian in the west wing. There is no admission fee for the solar viewing, but donations are appreciated. The Park charges \$6 per vehicle for entry. A \$2 donation is requested from adults 18 and over for admission to the observatory during the night viewing sessions.

SCAS members may set up telescopes in the observatory parking lot to assist with public viewing. Auto access closes at dusk, late arrivals must carry equipment from the horse stable parking area.

Classes

June 7 Night Sky Summer Series, 7:30 PM

June 28 Night Sky Summer Series, 7:30 PM

June 30 Observing Lab, 8:30 PM

July 5 Night Sky Summer Series, 7:30 PM

Classes are held at the Observatory. Reservations recommended.
Info: (707) 833-6979, <http://www.rfo.org> or email nightsky@rfo.org

A SIDEWALK ASTRONOMER

**A film about astronomy, cosmology and John Dobson
Opens July 15 at San Francisco's Roxie Cinema**

On any given night around the world, thousands of people peer into deep space because of John Dobson. An 89-year-old with a white ponytail and a knack for comedy, John Dobson revolutionized astronomy. "Possessing a quicksilver wit, a gift for turning a phrase that makes scientific concepts accessible, and an energy that belies his nearly 90 cycles around the sun, Mr. Dobson is one of history's greatest popularizers of science." —*Wall Street Journal*, 9/1/04



He is the inventor of the Dobsonian telescope mount, which changed the field of astronomy dramatically, making telescopes accessible to the public on every continent. A former Vedanta monk of the Ramakrishna Order, he is a cofounder of "Sidewalk Astronomers," an organization that encourages amateurs to share their telescopes and knowledge with others on busy city streets and in national

parks. As John says, "The Universe is bigger than the Earth; it's bigger than the solar system; it's bigger than our galaxy and we owe it to ourselves to notice it." The film follows John as he tours the country from the sidewalks of San Francisco to colleges, universities, astronomy clubs, star parties and to Stellafane, a convention of telescope makers in Vermont.

For details check out www.telescopictures.com. The Roxie Cinema is located at 3117 16th Street (at Valencia) in San Francisco, (415) 863-1087

SCAS PUBLIC STAR PARTY

These are public events—all are invited. Members with scopes are encouraged to attend.* Great for planetary astronomy with fellow observers at an easily accessible site.

SATURDAY, JUNE 11

Sunset: 8:35 PM PDT

End Astronomical Twilight: 10:32 PM PDT

Moonset: 00:29 AM PDT 6/12

Youth Community Park in Santa Rosa, on the west side of Fulton Road, between Guerneville Road and Piner Road, just opposite Piner High School. Contact: Bruce Lotz, Coordinator (707) 576-7833, ablotz@sonic.net *Note! Rental telescopes listed on Page 2 are **free** each month you participate in a SCAS-related Public Star Party.

MT. TAMALPAIS ASTRONOMY

Saturday, June 11, 8:30 PM

"Galaxies Like to Live Together," Dr. Roy R. Gal, U.C. Davis. How are galaxies distributed throughout the universe and what can surveys of galaxy clusters teach us about cosmology.

Presentations held in the Mountain Theatre. Viewing afterwards in Rock Springs Parking Area, provided by San Francisco Amateur Astronomers. The Madrone Picnic Area (next to the Mt. Theater) is reserved 1-1/2 hours before each program for informal gathering. Bring your picnic supper and meet the speakers before the talk. Information: <http://www.mttam.net/>

LICK OBSERVATORY

MUSIC OF THE SPHERES BENEFIT CONCERT SERIES

Lick Observatory presents a summer concert series which benefits the Lick Observatory Visitors Program. Seating begins one half hour before the concert. Talks by our famous research astronomers begin right after the music.

Weather permitting, viewing through the 36-inch telescope follows. Amateur astronomer volunteers provide additional outside viewing and informal talks. Not advisable for children under ten years old.

Tickets: Order soon! Only 160 seats are available each night. Concerts sell out quickly and ticket requests are filled in the order received. Complete information including concert performers and ticket ordering can be found at: <http://www.ucolick.org/public/music.html>

SHINGLETOWN STAR PARTY

Come join the fun under great skies, July 6-11, 2005! Prices range from \$20 for a one-day pass to \$60 for five days. After June 15, registration at the gate is the only option. Registration closes at 300 attendees. See all the info at www.shingletownstarparty.org

Events

THE GEYSERS STAR PARTIES

Excellent dark sky observing at ~2700' for members and guests.

Location: Palmieri Observatory, Mercuryville (near The Geysers). Longitude: 122deg 49min., Latitude: 38deg 46min.

SATURDAY, JUNE 4

Sunset: 8:31 PM PDT

End Astronomical Twilight: 10:26 PM PDT

Moonset: 6:48 PM PDT

Dress warm. If it's your first time to the Geysers site, go with someone who has gone before, or contact Mario Zelaya at (707) 539-6423, zelayadesigns@sbcglobal.net

UC BERKELEY ASTROPHYSICS CLUB

Institute for Particle Astrophysics Journal Club Seminars

The following Journal Clubs schedule for the Institute for Nuclear and Particle Astrophysics is tentative. The seminar becomes final usually a few days before the Friday of the talk!

June 3—Heinrich Paes (Univ. Hawaii) Speaking on neutrino oscillations and shortcuts in the extra dimension

June 10—John Bradley (LLNL) speaking on the dust extinction feature

June 17—Joshua Bloom (UCB) speaking on GRBs and cosmology

June 24—Jeff Newman (LBNL/INPA) speaking on changes in fine structure constant

July 8—Roland Burgmann (UCB) speaking on the great Sumatra earthquake

About the Club: All seminars are on Fridays (unless otherwise noted) and start at 12:00 (noon) with a brief presentation of the weekly scientific news. Typically the talks end by 13:00. The seminars take place in Bldg. 50, room 5026 (the INPA common room), Lawrence Berkeley National Laboratory, 1 Cyclotron Rd., Berkeley. If you have questions, comments, or suggestions please contact, preferably via email, Vitaliy Fadeyev VAFadeyev@lbl.gov. Visit <http://stokstad.lbl.gov/INPA/journalclub.html#aboutjclub> to read abstracts on the talks.

LAWRENCE HALL OF SCIENCE

“Real Astronomy” Exhibit

Measure a planet. Track an asteroid. This new exhibit, Real Astronomy Experience, let's you “lean” into the eyepiece of a professional astronomer. Join us for the excitement of developing an exhibit on the mysteries of space. Try out these debut activities and tell us what you think. Weekdays from 2:30-4:00 PM, weekends from 10:30-12:00 and 2:30-4:00.

LHS is on Centennial Drive below Grizzly Peak in the Berkeley Hills. General information: (510) 642-5132. \$8.50/adults; \$6.50/youth (5-18), full-time students, senior citizens, and the disabled; \$4.50/children 3-4; and free for children two and under. For more information visit www.lawrencehallofscience.org



SCAS YOSEMITE PUBLIC STAR PARTY

July 15 and 16

As of May 24, twenty-five people have signed on to join the SCAS 15th Annual Public Star Party at Glacier Point overlooking Yosemite Valley. In return for this public service, the park district allows us free entry to Yosemite and free camping at Bridalveil Campground which is about nine miles from Glacier Point.

The most that are allowed to camp at the group camp ground at Bridalveil Campground is 32, so there is room for a few more. Plan to arrive at Bridalveil Campground on Friday, July 15 early enough to set up your tent and then head off to Glacier Point for public astronomy until at least 10 PM. The next day you can do whatever you want but are obligated to then do public astronomy again Saturday evening at Glacier Point.

It's a real fun experience and, of course, the views are out of this world. Time is running out though, so if you are interested please contact Len Nelson at 763-8007.

MORRISON PLANETARIUM DEAN LECTURE SERIES

June 6—“Sun-Earth Connections—Scientific, Cultural, and Historical Perspectives”—Dr. Isabel Hawkins, University of California, Berkeley

The Sun, a sacred symbol in many cultures, serves as the topic of fascinating research by scientists who investigate the effects of our nearest star on Earth and other planets. Learn from cutting-edge research about how the interaction of the solar wind and other dynamic space weather phenomena affect our technology-dependent society today.

New Location: During reconstruction, lectures are held at the Jewish Community Center, 3200 California Street (at Presidio). Parking in the UCSF Laurel Heights campus parking lot is \$1.25/night. Parking in the JCC garage is \$1.25 per half-hour. All programs begin at 7:30 PM in Kanbar Hall at the JCC. Contact: 415/750-7141, <http://www.calacademy.org/planetarium/>

Young Astronomers



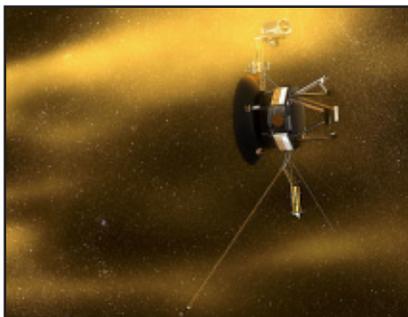
YA MEETING UPDATE

There will be no Young Astronomers meetings held during the summer. Meetings will resume in the fall when the next school year begins. In the meantime, read your monthly SCAS newsletter for announcements of public and SCAS events that you are always welcome to attend. Mark them on your calendar so you don't miss out! You'll receive an email announcement in mid-August to remind you of the Fall YA schedule as the new school year resumes.

VOYAGER ENTERS SOLAR SYSTEM'S FINAL FRONTIER

NASA's Voyager 1 spacecraft has entered the solar system's final frontier, a vast, turbulent expanse where the Sun's influence ends and the solar wind crashes into the thin gas between stars. "Voyager has entered the final lap on its race to the edge of interstellar space, as it begins exploring the solar system's final frontier," said Dr. Edward Stone, Voyager project scientist at CalTech in Pasadena.

In November 2003, the Voyager team announced it was seeing events unlike any encountered before in the mission's then 26-year history. The team believed the unusual events indicated Voyager 1 was approaching a strange region of space, likely the beginning of a new frontier called the



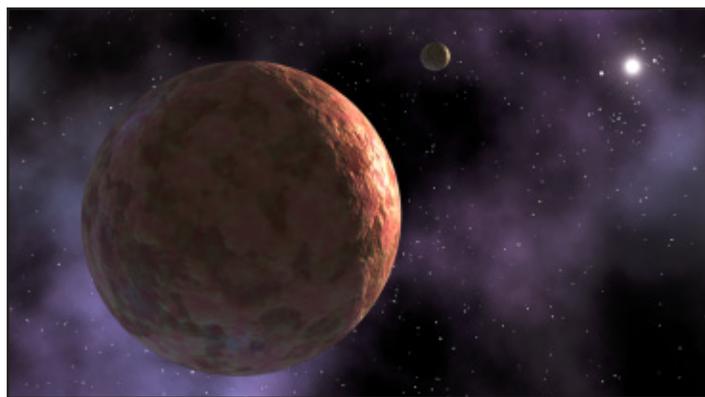
NASA/Walt Feimer

In July 2004 scientists used Voyagers to track a solar blast to the edges of the solar system.

"termination shock region." The termination shock is where the solar wind, a thin stream of electrically charged gas blowing continuously outward from the Sun, is slowed by pressure from gas between the stars. The solar wind slows abruptly from its average speed of 300 to 700 km per second and becomes denser and hotter.

The strongest evidence that Voyager 1 has passed through the termination shock into the slower, denser wind beyond is its measurement of an increase in the strength of the magnetic field carried by the solar wind and the inferred decrease in its speed. In December 2004, Voyager 1 observed the magnetic field strength increasing by a factor of two and a half, as expected when the solar wind slows down. The magnetic field has remained at these high levels from December until now.

For their original missions both Voyagers were equipped with three radioisotope thermoelectric generators to produce power for the spacecraft systems and instruments. Still operating in remote, cold and dark conditions 27 years later, the Voyagers could last until 2020.



Does the recently discovered planetoid Sedna, shown in this artist's impression, have a moon? —NASA/JPL-Caltech

Solving a Sedna Mystery

Orbiting beyond Pluto, a planetoid called Sedna has aroused plenty of curiosity—and created some confusion—since its discovery last year. It's the most-remote object known in the solar system. Astronomers have been especially frustrated by their inability to find a moon around the distant object. The first observations had suggested that there ought to be one. These observations appeared to show that Sedna spins very slowly, just once every 20 days. Only the tug of a little moon could explain this lazy spin rate. Images taken by the Hubble Space Telescope, however, failed to turn up a moon.

Now, researchers from the Harvard-Smithsonian Center for Astrophysics in Cambridge, MA, say they have solved the puzzle. New measurements show that Sedna doesn't spin so slowly after all. Using a highly sensitive telescope on Mount Hopkins in Arizona, the astronomers measured periods of brightness and darkness on Sedna. The results showed that the planetoid spins some 50 times faster than previous estimates had suggested.

Elsewhere, researchers turned up other interesting news about Sedna. Contrary to earlier assumptions, they found that Sedna doesn't appear to have any ice on its surface. That's strange because it's very cold so far away from the sun. And Pluto, which is closer to the sun, has lots of ice on it. So does Pluto's moon, Charon. The explanation for this mystery, the scientists suggest, is that Sedna used to have an icy surface. However, constant bombardment by cosmic rays and the sun's ultraviolet light produced a dark coating instead. Because Pluto and Charon orbit closer to the sun than Sedna, they might encounter more debris than Sedna does. Frequent collisions with this debris could then either prevent a dark coating from forming or deliver fresh ice to their surfaces.—E. Sohn

YA INFORMATION

Meetings: 7:30 PM the second Friday of each month of the school year, at Apple Blossom School, 700 Water Trough Road, Sebastopol, in the Multipurpose Hall. Open to all Sonoma County students.
Telescope viewing is held in the upper parking lot after the meeting. For directions, contact any of the officers listed below.

YA ELECTED OFFICERS

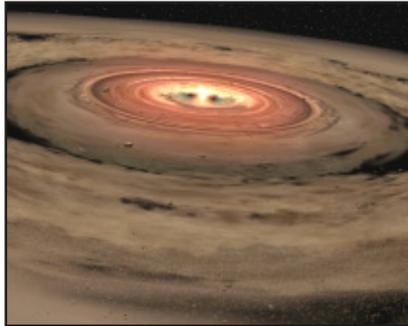
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Seeing in the Dark with Spitzer

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.



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

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 NASA

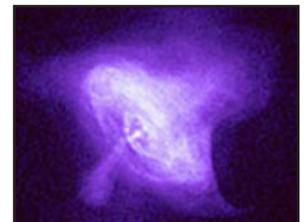
June Observing Notes

- June 6** New Moon
- June 10** Double shadow transit on **Jupiter** 10:29 PM PDT
- June 15** First Quarter Moon
- June 16** **Jupiter** 4° North of Moon Midnight PDT
- June 17** Double shadow transit on **Jupiter** 00:59 AM PDT
- June 21** **Summer Solstice**
- June 22** Full Moon
- June 24** Double shadow transit on **Jupiter** 3:35 AM PDT
- June 25** **Venus** 1.3° N of **Saturn**
- June 28** Last Quarter Moon
- June 29** **Mars** 2° S of Moon 9:00 PM
- July 3** **11:00 PM PDT: NASA’s Deep Impact Mission** will culminate in the crash of a speeding projectile into **comet 9P/Tempel 1**. The impact should cause the comet to brighten from 10th magnitude to possibly 5th magnitude. The effect could last for days, weeks or longer. Look for the comet low in the SW in Virgo, about 3.5° NE of Spica. Faintly visible with any telescope or full-size binocular. We are favorably positioned for the view.

LINKS FEATURED THIS ISSUE

World Year of Physics Website: Has downloads, event notices, projects, classroom materials and lots about Einstein. <http://www.physics2005.org/>

Einstein@Home is a project developed to search data from the Laser Interferometer Gravitational wave Observatory (LIGO) in the US and from the GEO 600 gravitational wave observatory in Germany for signals coming from extremely dense, rapidly rotating stars. Such sources are believed to be either quark or neutron stars, and a subclass of these are already observed by conventional means as pulsars or X-ray emitting objects.



Pulsar-driven Crab Nebula, as photographed by the orbiting Chandra X-ray Observatory

Scientists believe that some of these compact stars may not be perfectly spherical, and if so, they should emit characteristic gravitational waves, which LIGO and GEO 600 may begin to detect in coming months. Read more at <http://einstein.phys.uwm.edu/>

Exciting new experiments may let them catch the waves in action and open a whole new window on the universe - but *they need your help to do it!* Read about the screensaver program which, like Seti@Home, uses your computer’s downtime to run calculations. Visit: <http://www.physics2005.org/events/einsteinathome/index.html>

Mauna Kea Observatories: Follow the “observatories” link, then click on each one in photo. <http://www.cfht.hawaii.edu/HawaiianStarlight/>



Sonoma County Astronomical Society Membership Application/Renewal

The \$25.00 Annual Membership fee for 2005-2006 was *DUE JUNE 1*.

Please complete this form and give it to Walt Bodley with your check, payable to "SCAS," at the next meeting, or mail to: **SCAS, P.O. Box 183, Santa Rosa, CA 95402**

New **Renewal** (If renewing, provide name only, plus any information that has changed).

Name: _____

Address: _____

City, State, Zip: _____

Telephone: _____

Email Address: _____

Your renewal dues include membership in the Astronomical League, our monthly newsletter *Sonoma Skies*, access to the Palmieri Observing site at the New Moon, discounted subscriptions for *Sky and Telescope* and *Astronomy* magazines, great guest speakers at our monthly meetings, and opportunities to meet interesting people who share your interest in many aspects of astronomy and science.

**Sonoma County
Astronomical Society**

P.O. Box 183
Santa Rosa, CA 95402



Sonoma Skies

June 2005

JUNE 8

John Dillon

**Ancient Astronomy,
the First Science**