

Sonoma Skies

Newsletter of the Sonoma County Astronomical Society
A nonprofit scientific and educational organization
www.sonomaskies.org



October 2006

Volume XXIX No. 8

Striking Sparks 2007 Update

by Larry McCune, Striking Sparks Coordinator

The 2007 program has some changes requiring applicants to: (1) attend one or more YA meetings or RFO public nights and (2) write an essay about their astronomy interests and some astronomy subjects that they have researched. We will have signup sheets at the meetings or events to track attendance.

Here is the program outline:

Teachers select and nominate up to 2 students who have demonstrated genuine interest in science and astronomy. SCAS members can also nominate applicants. Applicants attend one or more SCAS Young Astronomer meetings or the Robert Ferguson Observatory and write an essay about their interest in astronomy and astronomy subjects.

Each teacher or SCAS member nominating a student writes a supporting statement specific about how a telescope will be a "Spark" to the student's interest in astronomy.

All contest entries must be postmarked no later than Saturday, January 13, 2007.

The awards will be made at the February Young Astronomers meeting. The schedule was arranged to allow winning students to attend YA meetings or use their telescopes before the school summer vacation. The mandatory attendance at the YA meetings or RFO is a measure of the student and parents' willingness to participate.

And of course, we need sponsors and volunteers to assist with the program.

—*Editor's Note:* Keep your eyes open for likely candidates when you do public astronomy. At RFO last weekend I met a remarkable 10-year-old named Sarah who is already teaching her family about the stars. Good candidates certainly stand out in the crowd!

COMING TO SCAS NEXT MONTH: JOHN DOBSON

The SCAS will host speaker John Dobson at the November meeting. *Our location will change for that meeting only:* It will be held at Santa Rosa Junior College, Baker Hall, Room 1809, near the Planetarium. Directions and parking details will be announced in next month's newsletter.

Why are there Stars? How are they Made?

SCAS October 11 Meeting, Proctor Terrace School

On a clear night, the sky is filled with countless stars. These objects must be the natural outcome of processes that occur all the time, throughout our Galaxy and others. Indeed, images taken with radio



The Rosette Nebula

and infrared telescopes show us new stars forming relatively nearby.

The progenitor objects are large clouds permeating interstellar space. These clouds undergo gravitational collapse to form primitive stars, which then evolve to become mature objects like our own Sun. A large body of research, mostly undertaken within the past few decades, has led to a good understanding of the basic evolutionary process. Nevertheless, deep mysteries remain in this active and exciting field.

Dr. Steven Stahler is an astrophysicist at U. C. Berkeley. Raised in Maryland, he attended graduate school at Berkeley in physics. He was a professor at MIT before returning to the Bay Area in 1992. His research centers on the problem of star formation, and he recently coauthored the first comprehensive textbook in the field (*The Formation of Stars*, Stahler & Palla, Wiley-VCH, 2004).



Trained as a theoretical physicist, Steve especially delights in the esthetic aspect of his research, which he tries to convey in his numerous public talks. Won't you join us for this exciting talk, and bring your questions!

Young Astronomers See page 6

Sonoma County Astronomical Society (SCAS)

Membership Information

Meetings: 7:30 PM on the second Wednesday of each month, in the Multipurpose Room of Proctor Terrace Elementary School, 1711 Bryden Lane at Fourth Street, 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 pay partial-year dues of \$12.50.

Star Parties: See the Events section for dates and times.

Rental Telescope: Members are eligible to borrow the club's 80mm refractor with tripod. Contact any Board member listed below.

Egroup URL: Connect with other members about going observing, observing reports and chat about astronomy and news items from AANC and *Sky & Telescope*. Hosted by Robert Leyland at r.leyland@verizon.net. Any SCAS member is welcome to join. 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*, 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.

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 publications@sonomaskies.org

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Visit us on the web at:
www.sonomaskies.org

President's Message:

WELCOME BACK, SONOMA SKIES!

by John Whitehouse

We are very pleased to re-introduce you to Cecelia Yarnell, our new "old" newsletter editor. I am sure you will be pleased with the attractive, quality product of her talent and dedication.

I regret any inconvenience to our members who missed last month's issue; call it a little "summer vacation?" I encourage you to submit items or articles to Cecelia that may be of interest to our members. And be sure to say "thanks!" when you see Cecelia!



Another dedicated volunteer worthy of our appreciation is Larry McCune. Already serving as our Treasurer, Larry has taken on the additional mantle of Striking Sparks Program Coordinator. Larry needs little introduction, as he is a long-time active member of SCAS and one of the original "old flints" for Striking Sparks (sorry, Larry!). Thanks Larry for carrying the torch (spark?) for this worthwhile program, and for your always good humor.

Folks like Cecelia and Larry (and others) exemplify the volunteer spirit that keeps our club thriving. I hope their generous spirit inspires all of us to participate in your club.

Stay tuned this fall for some exciting events coming up. John Dobson is coming to visit with us for the November meeting. The same day we will have a chance to view a rare transit of the Sun by Mercury. Quite a day! (Be aware that meeting will be held at Santa Rosa Junior College.)

With fall's coming the nights are getting longer, providing more opportunities for observing. It would be nice to get together for some camaraderie under the stars, wouldn't it? Hope to see you there!

ASTRONOMY MAGAZINE SUBSCRIPTIONS DUE OCTOBER 10!

Treasurer Larry McCune received the annual notice from Astronomy Magazine that the 2007 club member subscription or renewal rate will be \$34 for one year or \$60 for two years. If you are interested in the club discount, make your check payable to "SCAS" and mail it before October 10 to:

Larry McCune, SCAS Treasurer
544 Thyme Place
San Rafael, CA 94903

OBSERVER'S GUIDES AND CALENDARS

Len expects to have available at the October meeting the 2007 astronomy calendars and Observer's Handbook for those that requested them previously. The calendars will be \$8.50 and the handbooks \$16.00. Bring check or correct change or Len will assume any overages are a deserved 'tip'. :-)

October Observing Notes

- 10/4 Lunar Occultation: 83 Aqr disappears behind the Moon's dark limb at 9:25 PM
- 10/5 Lunar Occultation: phi Aqr disappears behind Moon's dark limb at 3:14 AM
- 10/6 Full Moon near perigee, large tides
- 10/9 Lunar Occultation: epsilon Ari disappears behind Moon's bright limb at 4:24 AM and reappears from dark limb at 5:30 AM
- 10/9 Lunar Occultation of Pleiades star cluster: Begins before moonrise in ENE, continues until 11:30 PM. Stars will disappear (D) on the bright limb and reappear (R) on the dark limb. Events: 17 Tau R 9:31; eta D 9:44; 23 R 10:06; 27 D 10:26; 24 R 10:35; eta R 10:38; 27 R 11:02; 28 R 11:13.
- 10/13 Last Quarter Moon
- 10/16 Crescent Moon near Saturn in E. before dawn
- 10/20 Zodiacal Light visible in East around 5:30 AM through Nov. 2
- 10/21 New Moon
- 10/21 Orionid meteor shower peaks (best viewing from midnight to 5:30 AM)
- 10/29 Daylight Savings Time ends 2:00 AM
- 10/29 First Quarter Moon

Mercury Transit: A very special event occurs during the day of 11/8: Mercury will transit the sun! Transits of the sun's disk by Mercury only occur about 13 times each century.

Observing this event requires suitably large telescopes equipped with special filters for viewing the sun. DO NOT attempt to view the sun directly yourself! I am certain the event will be carried live at various websites (try NASA or do a web search).

The approximate (± 1 minute) times are: 11:12am (leading edge contact inward); 11:14am (trailing edge contact inward); 4:08pm (leading edge contact outward); 4:10pm (trailing edge contact outward).

—Most of above info courtesy of Jack Welch

USEFUL LINKS:

537 Best Deep-Sky Objects Sorted by Constellation, based on Orion's Deep Map 600 list: <http://pages.sbcglobal.net/raycash/dmcon.htm>

AstronomyBoy's Top 100 Non-Messier Objects for Amateur Telescopes: <http://www.astronomyboy.com/saa/>

Two websites that Steve Gottlieb is associated with: <http://ngcic.org/>, the organization that is reevaluating the NGC catalog, and <http://www.angelfire.com/id/jsredshift/>, for observing lists and challenges.



SOCIAL AMENITIES

Thanks to Benita Lorentz for providing coffee and refreshments at the September meeting.

THE SILENT AUCTION IS A HIT!

Looks like members have a lot of astronomy gear to sell and other members want to buy it, so we'll continue providing the Silent Auction table at monthly meetings. Insiders say that this month there will be a goodly number of various telescope related parts and equipment will be available. Bring your cash or checkbook and your own items to sell.

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 Striking Sparks and offers a huge selection of telescopes, accessories and more. 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

Events

ROBERT H. FERGUSON OBSERVATORY

Public Viewing Saturday, October 21

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

Night Viewing begins 8:00 PM

The Observatory: 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. 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 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, OTHER EVENTS

Oct 17 Night Sky Fall Series, 7:00 PM

Oct 18 Observing Lab: “Binaries Multiple Stars,” 7:00 PM
(raincheck: Wednesday Oct. 25)

Oct 24 Night Sky Fall Series, 7:00 PM

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

SCAS SCHOOL STAR PARTIES

Oct. 25, 7:00 PM—Grant Elementary School in Petaluma
(raincheck night: 10/26)

SAN FRANCISCO AMATEUR ASTRONOMERS

Oct. 18, 7:30 PM: “Planet Portraits Near and Far”
—Artist and illustrator, Lynette R. Cook

In this beautifully illustrated presentation, Cook will discuss the challenges and rewards of being an astronomical illustrator who specializes in planets. Taking care to balance scientific facts in one hand and an artist's tools in the other, her work is variable. From depictions of worlds too distant to be photographed close up, to educational visuals that become necessary as astronomy redefines itself, and finally to the delightful creations for Dava Sobel's book “The Planets,” this talk will be both fun and informative. See her work at <http://extrasolar.spaceart.org/>

Meetings are held at the Randall Museum, 199 Museum Way, San Francisco. For more information go to: <http://www.sfaa-astronomy.org/sfaa/lectures/index.shtml>

SRJC PLANETARIUM

“Comets, Asteroids, and Planet Earth” —
Oct.13 - Nov. 19

Considering what happens in our everyday lives, it would seem that planet Earth occupies its own private place in space; not so, we have roommates! In this show we will explore the world of comets and asteroids and how they impact this planet and its life forms.

Shows are held at Santa Rosa Campus, Lark Hall, Room 2001, on Fridays and Saturdays at 7:00 PM and 8:30 PM, Sundays at 1:30 PM and 3:00 PM during the Fall and Spring semesters. Admission is \$5 General; \$3 Students and Seniors (60+). Tickets are sold at the door only, beginning 30 minutes before show time. A parking permit is required and is included in the Planetarium admission price. Pick it up at the planetarium when you pay admission. Please arrive early enough to place your permit on your vehicle's dashboard before the show starts.

Info: 527-4372, <http://www.santarosa.edu/planetarium/>



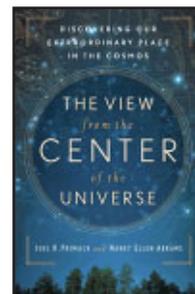
NASA/AMES RESEARCH PARK

Oct. 25, 7-9 PM: “The View from the Center of the Universe”

Cosmologist Dr. Joel R. Primack and writer/philosopher Nancy Abrams will discuss recent advances in astronomy, show spectacular new videos, and frame a compelling new theory for understanding the universe.

Lectures are held in Building 943 in the Eagle Room at NASA Research Park, Mountain View. Directions from Highway 101 Southbound: Exit Moffett Blvd./NASA Parkway. At the stop light, turn right. Turn right at the stop sign, before the main gate. The NASA Exploration Center is on the right, proceed behind the dome for Parking. Open to the Public, Admission is free!

<http://researchpark.arc.nasa.gov/lecture%20series/lecture.html>



Events

MORRISON PLANETARIUM DEAN LECTURE SERIES

Oct. 9, 7:30 PM: “Seeing the Sky with Gamma-ray Eyes”—Dr. Steve Ritz, NASA Goddard Space Flight Center and University of Maryland

Gamma rays reveal the most powerful processes in the Universe, including black holes, neutron stars, and other amazing objects, and they allow us to test some basic laws of physics in unique ways. The Gamma-ray Large Area Space Telescope (GLAST) will be launched next year. Together with other facilities, GLAST will open a wide new window on the high-energy sky. This talk will introduce the main scientific questions in this area, along with the opportunities for discovery.

Location: Kanbar Hall, 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. Tickets \$4 at the door or by email. Contact: 415/321-8000, <http://www.calacademy.org/planetarium/dean.cfm>

SILICON VALLEY ASTRONOMY LECTURE SERIES

Oct. 4, 7:00 PM: “Dark Energy and the Runaway Universe”—Astronomer Alex Filippenko of the University of California, Berkeley

In 1998, observations of very distant exploding stars provided intriguing evidence that the expansion of the entire Universe is speeding up with time, rather than slowing down due to gravity as expected. Today, new and completely independent observations strongly support this amazing conclusion. Over the largest scales of space, our Universe seems to be dominated by a repulsive “dark energy” stretching the very fabric of space itself.

Arrive early—seating is limited. Location: Smithwick Theater, Foothill College, El Monte Road and Freeway 280, Los Altos Hills. Free and open to the public. Parking \$2. Info: 650/949-7888

UC BERKELEY ASTROPHYSICS CLUB

Institute for Particle Astrophysics Journal Club Seminars

Oct. 6—Kyle Dawson (LBNL/INPA) speaking on new results from the SCP cluster search

Oct. 13—Robert Quimby (Univ Texas, Austin) speaking on UT search for supernovae in the Virgo cluster

Oct. 20—Richard Klein (UCB) speaking on simulations of star formation

Nov. 3—Jason Wright (UCB) speaking on discovering exoplanets via the radial velocity method

Lectures: 12:00 Noon. Location: Bldg. 50, room 5026, Lawrence Berkeley National Laboratory, 1 Cyclotron Rd., Berkeley. Contact Vitaliy Fadeyev VAFadeyev@lbl.gov. Information: <http://stokstad.lbl.gov/INPA/journalclub.html#aboutjclub>

SONOMA STATE UNIVERSITY SERIES “WHAT PHYSICISTS DO”

Mondays at 4:00 PM

Schulz Hall Room 3001 (Coffee at 3:30 PM)

Oct. 2—Beyond the Limits of Magnetic Recording

Dr. Mason Williams of the Hitachi San Jose Research Lab (retired) will discuss physical limits to future progress in areal density of magnetic disk drive storage. This lecture is presented by the IEEE Magnetics Society Distinguished Lecturer Program.

Oct. 9—The Plug-In Hybrid

Dr. Andrew Frank of the University of California, Davis will describe a way to transition from oil-powered transportation without a disturbance in our social structure.

Oct. 16—Biomineralization—Nature’s Way of Crystallizing

Dr. Christine Orme of Lawrence Livermore National Laboratory will describe how she and her colleagues image moving atomic steps and how these movies hint at the way bones, teeth, and kidney stones grow.

Oct. 23—The Search for Terrestrial Planets

Dr. Debra Fischer of San Francisco State University will discuss new directions in the search for Earth-like planets orbiting nearby stars.

Oct. 30—Is Hydrogen the Fuel of the Future?

Dr. Joan Ogden of the University of California, Davis will present new studies of the prospects for using hydrogen energy in vehicles, buildings and power plant.

Contact <http://phys-astro.sonoma.edu/wpd/>

SSU OBSERVATORY PUBLIC VIEWING

Oct. 20, 8-10 PM: Uranus, Network Nebula, Dumbell Nebula

Observatory located inside the stadium area at the SE corner of campus (E. Cotati Ave. and Petaluma Hill Rd., two miles east of US 101 at Cotati). Follow signs to campus. Parking Lot F is most convenient. Call 707/664-2267 before coming if it appears weather may force cancellation. <http://www.phys-astro.sonoma.edu/observatory/pvn.html>

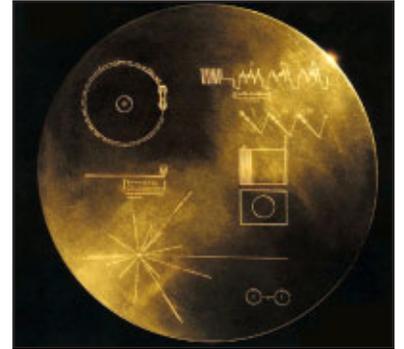
Staggering Distance

By Dr. Tony Phillips

Tonight, when the sun sets and the twilight fades to black, go outside and look southwest. There's mighty Jupiter, gleaming brightly. It looks so nearby, yet Jupiter is 830 million km away. Light from the sun takes 43 minutes to reach the giant planet, and for Earth's fastest spaceship, New Horizons, it's a trip of 13 months.

That's nothing.

Not far to the left of Jupiter is Pluto. Oh, you won't be able to see it. Tiny Pluto is almost 5 billion km away. Sunlight takes more than 4 hours to get there, and New Horizons 9 years. From Pluto, the sun is merely the brightest star in a cold, jet-black sky.



That's nothing.

A smidgen to the right of Pluto, among the stars of the constellation Ophiuchus, is Voyager 1. Launched from Florida 29 years ago, the spacecraft is a staggering 15 billion km away. It has traveled beyond all the known planets, beyond the warmth of the sun, almost beyond the edge of the solar system itself.

Now that's something.

"On August 15, 2006, Voyager 1 reached the 100 AU mark—in other words, it is 100 times farther from the Sun than Earth," says Ed Stone, Voyager project scientist and the former director of NASA's Jet Propulsion Laboratory. "This is an important milestone in our exploration of the Solar System. No other spacecraft has gone so far."

At 100 AU (astronomical units), Voyager 1 is in a strange realm called "the heliosheath."

As Stone explains, our entire solar system—planets and all—sits inside a giant bubble of gas called the heliosphere. The sun is responsible; it blows the bubble by means of the solar wind. Voyager 1 has traveled all the way from the bubble's heart to its outer edge, a gassy membrane dividing the solar system from interstellar space. This "membrane" is the heliosheath.

Before Voyager 1 reached its present location, researchers had calculated what the heliosheath might be like. "Many of our predictions were wrong," says Stone. In situ, Voyager 1 has encountered unexpected magnetic anomalies and a surprising increase in low-energy cosmic rays, among other things. It's all very strange—"and we're not even out of the Solar System yet."

To report new developments, Voyager radios Earth almost every day. At the speed of light, the messages take 14 hours to arrive. Says Stone, "it's worth the wait."

Keep up with the Voyager mission at voyager.jpl.nasa.gov. To learn the language of Voyager's messages, kids (of all ages) can check out spaceplace.nasa.gov/en/kids/vgr_fact1.shtml.

—This article was provided by the JPL/NASA

Young Astronomers



The Big Bang!

YA October 20 Meeting, 7:30 PM
at Apple Blossom School

Talk about a blast from the past! Join us for a presentation about the biggest blast of them all: the Big Bang Theory. Scientists have always speculated about the nature of the universe, and how the universe came to be. Come to our YA meeting on Friday, October 20 to learn about this most widely-supported theory about the beginning of our universe. Is the expansion of the universe speeding up, or slowing down? Will the universe continue to expand forever, or will it collapse upon itself, ending in a "Big Crunch?" Learn about elusive dark matter, and the latest efforts to find it. Be prepared to stretch your mind at this month's meeting!

As usual, weather permitting, there will be telescope viewing in the upper parking lot after the general meeting. Bring your telescope and a friend!

WELCOME BACK YOUNG ASTRONOMERS!

Our first meeting of the new school year was held on Friday, September 15, at Apple Blossom School. YA president Melissa Downey opened our new season with a fascinating presentation about comets. Melissa discussed everything from "comet lore", to the orbits of comets, their composition, and theories about comet origins. Throughout the evening audience questions led to lively and engaging discussions among YA members. After the presentation the clear, dark sky provided a wonderful opportunity for telescope viewing in the upper parking lot.

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. **Directions:** From Hwy. 116 in Sebastopol, turn west onto Bodega Ave. Continue on Bodega Ave. almost two miles to Water Trough Rd. Turn left and go about 1/3 mile to the school, on your right. From Hwy. 12, go straight through Sebastopol, past Main Street, and continue as above.

YA ELECTED OFFICERS

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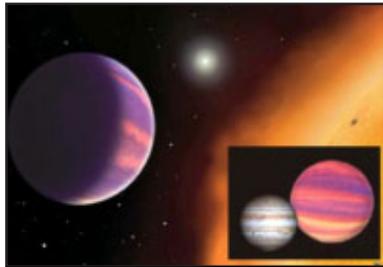
ADULT ADVISER: Gary Jordan 829-5288

Giant Planet is a Real Light-Weight

Astronomers recently made a fuss about Pluto, saying that it's not really big enough to be called a planet. Now, they're making a fuss about a planet that might be the largest one yet discovered. It's 36 percent wider than Jupiter, which is the largest planet in our solar system.

The newfound planet, HAT-P-1b, is 450 light-years from Earth. HAT-P-1b circles its parent star very closely—much more closely than Earth circles its own parent star, the sun. It also has a surprisingly low density.

Although it's bigger than Jupiter, it has only half of Jupiter's mass. That makes it a puffy giant, with the lowest density of any known planet, says co-discoverer Robert Noyes of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass. That's very unusual for a planet, especially one that orbits its star so closely. "We have a bit of a puzzle," Noyes says.



Insert compares Jupiter at left

Astronomers found HAT-P-1b using six small, robotic telescopes. Four of the telescopes are at the Whipple Observatory in Arizona, and the other two are in Hawaii. They detected the planet because, while orbiting, it passes directly between Earth and its parent star, the fainter member of a double-star system. Each time it does this, the planet blocks a little bit of the star's light reaching Earth.

HAT-P-1b is an extrasolar planet, which means it exists outside our solar system. It's one of about 200 extrasolar planets that astronomers have discovered so far. However, only one other extrasolar planet has a density nearly as low as that of HAT-P-1b. Originally, some astronomers had considered this planet a fluke. Now, with the discovery of HAT-P-1b, they have to take more seriously the idea that puffy, hot planetary supergiants may not be that rare.

—Adapted from an article by E. Jaffe in Science News

Scientists Observe Breakup of a Comet

For a comet, completely breaking up is not so hard to do. A comet called 73P/Schwassmann-Wachmann 3 completely orbits the sun every 5.4 years. For years it has been disintegrating, but the pace picked up quite a bit last Spring. By early May, the comet had already broken into at least 59 pieces. In mid-May, chunks of this disintegrating comet passed within 11.7 million kilometers (7.3 million miles) of Earth. That's the closest any comet has come to our planet in 20 years!



As it got closer to the sun, scientists got to see the comet crumble even more.

The Hubble Space Telescope and other instruments watched the comet's biggest 36 chunks break up into dozens of smaller bits. These pieces measured between 20 and 30 meters (66 to 98 feet) across. Images from the Spitzer Space Telescope showed lots of tiny specks of dust between the comet chunks.

One theory is that comets lose material mostly by releasing millimeter-size dust particles. However, Hubble images showed that several house-size fragments generated by the breakup of one of the larger chunks, were pushed in the direction opposite to the sun. Scientists suggest that solar heating vaporized icy patches on the chunks, jetting them toward the comet's tail. Solar heating may also have been responsible for the comet's breakup. Although this heat isn't likely to penetrate more than a meter beneath a comet's surface, that might be deep enough if the heat encounters a large crack within a highly porous comet.



The breakup showed that the cores of comets "are as fragile as the meringue in lemon-meringue pie," said Casey Lisse of the Johns Hopkins Applied Physics Laboratory in Laurel, Md.

Analyses of some of the larger chunks reveal details about how the comet fell apart. "The breakup cracked the comet open like an egg," revealing its interior composition, said Cincinnati-based Spitzer scientist Michael Sitko of the Space Science Institute.

—Adapted from an article by E. Sohn in Science News

**Sonoma County
Astronomical Society**

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Santa Rosa, CA 95402



Sonoma Skies

October 2006

OCTOBER 11

Dr. Steven Stahler

**Why are there Stars?
How are they Made?**

**Silent Auction
at Monthly
Meetings**

See Page 3 for Details