

Sonoma Skies

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

www.sonomaskies.org



March 2008

Volume XXXI No. 3



Photo by Len Nelson

2008 Sparks Winners, left to right: Quincy Zlotnick, Michael Masters, Noah Dove, Elliott Dellorco, Frank Demma, Maxwell Hyde

Sparks Winners 2008

The 2008 Striking Sparks program concluded on Friday, February 8 at Apple Blossom School with the awarding of six Dobsonian telescopes to the winners of the essay contest. We had a good turnout of teachers, sponsors, Young Astronomers, parents and SCAS members for the event.



Photo by Kenneth Frank

Larry McCune introducing the Winners

After the telescopes were awarded we had some fantastic viewing with the Sparks Telescopes from the dark site near the school. We were rewarded with the winners' enjoyment of views of Saturn, Andromeda Galaxy, Orion Nebula, Mars and more.

We would also like to express our appreciation to Gary Jordan and Paul Judge of Apple Blossom School for their ongoing support of the Young Astronomers as advisers and making the facility available for meetings. A special thank you for Len Nelson who has been working with the Young Astronomers throughout the year and preparing for the awards.

Thank you again to our sponsors: Keith (former SCAS President) and Nicolette Payea; The Astronomical Society of Northern California; Michael D. Kran - In Memory of Kingsley Wightman (former director of Chabot Observatory); Arrow Electric Service, Inc. - Matt and Norma Bunyard (parents of last year's winner Sara Bunyard); the generous Frank Hejtmanek Fund; and Hilda Mansfield in Memory of Ralph Mansfield (a long-time SCAS member and contributor).

We would also like to recognize Orion Telescopes of Cupertino for providing the telescope purchasing arrangements and to Sam Swiss of Scope City for supplying the planespheres, pen lights and lens cleaning kits for each winner.

—Larry McCune, Striking Sparks Coordinator

Adaptive Optics: A Sharper View of the Universe

Scott Severson, Sonoma State University
SCAS March 12 Meeting, 7:30 PM
at Proctor Terrace School

Astronomical imaging from the ground is limited by the earth's turbulent atmosphere. Adaptive Optics is a method for removing blur in an optical system that can allow ground-based telescopes to image as clearly as if they were in space. Dr. Severson will present his experience in designing, testing and using such systems. He will discuss adaptive optics studies of extrasolar planets, stellar occultations and active galactic nuclei. He will also discuss the development of a one-meter robotic telescope at Galbreath Wildlands Preserve.



Dr. Severson and Sonoma State University student Orion Leland at work on a prototype solar concentrator for Galbreath Wildlands Preserve Observatory.

Dr. Severson is Assistant Professor at Sonoma State University and is establishing the Galbreath Wildlands Preserve Observatory. This one-meter robotic telescope will provide a research capability specializing in time domain astronomy.

Prior to coming to Sonoma State University, Dr. Severson was an Associate Research Astronomer at UCO/Lick Observatory University of California, Santa Cruz. He developed advanced astronomical instrumentation including infrared cameras, spectrographs and adaptive optics systems. He uses these advanced capabilities to study the central regions of galaxies and planetary science.

Dr. Severson is dedicated to recruiting, educating and retaining a diverse population of scientists. Come join us for a close-up view of adaptive optics. The public is welcome.

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. Once you have received the discount rate, you may renew your subscription by sending your personal check with the renewal notice directly to Sky Publishing. Discount subscriptions to *Astronomy* Magazine occur annually in October. Check *Sonoma Skies* for details.

Library: SCAS Librarian David Simons 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 10 days prior to the end of each month.** Mail to: Editor, SCAS, P.O. Box 183, Santa Rosa, CA 95402, or email publications@sonomaskies.org

SCAS Elected Board

President: John Whitehouse 539-5549 jmw@sonic.net

Vice-President & Program Director: Len Nelson 763-8007
lennelsn@comcast.net

Treasurer: Larry McCune, (415)492-1426 llmccune@comcast.net

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Membership Director: Walt Bodley 823-5268

membership@sonomaskies.org

Director of Community Activities: Lynn Anderson 433-1154
astroman@sonic.net

Publications Director: Cecelia Yarnell 569-9663
publications@sonomaskies.org

SCAS Appointed Positions

Young Astronomers Advisor: Gary Jordan 829-5288
SieraMolly@comcast.net

Striking Sparks Program Coordinator: Larry McCune
(415)492-1426 llmccune@comcast.net

Amateur Telescope Making: Steve Follett 542-1561
sfollett@sonic.net

Librarian: David Simons 537-6632 davidsimons@planetatm.com

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

March Observing Notes

3/3 Mercury at greatest elongation West, 3 AM
Crescent Moon nr Jupiter, 5:30 AM. At 0615, try to spot Venus and Mercury just above the horizon and slightly north (left) of the moon.

3/5 Crescent Moon (5.5% crescent) very near Mercury and near Venus, 6AM,

Time alt/az

0600 5/115

0615 8/118

Civilian twilight: 0609; Sunrise: 0636

3/5 Moon very near Venus, 10:30 AM. VERY close daytime conjunction. CAUTION required for observation attempts due to nearby sun.

3/7 New Moon, 9 AM

3/9 Daylight Saving Time begins 2 AM. Move clocks forward one hour.

3/15 Moon near Mars, 8PM

3/19 Moon very near Regulus and near Saturn, 1 AM

Vernal Equinox, 10:49 PM. The Vernal Equinox is the time when the Sun passes through the Celestial Equator along its upward path toward the Summer Solstice. "Equinox" means equal night. At the time of Equinox, the Sun is essentially above and below the horizon an equal amount of time for all locations on planet Earth. The Vernal Equinox marks the official beginning of our Spring season and in Sonoma County at 12:00 Noon you will find the Sun 51.5 degrees above our southern horizon.

3/23 Zodiacal Light, 9 PM. Viewable in west after astronomical twilight in very dark locations for next two weeks.

3/27 Moon very near Antares, 3 AM

3/30 Moon near Jupiter, 5 AM

This month, **Saturn** is high in the east at dusk, visible all night. Its rings will continue to open slightly until the end of April.

Jupiter is best seen at dawn in telescopes.

—Most of above courtesy of Jack Welch

FOR SALE

Orion Observer 60mm refractor AZ aluminum very portable collapsible mount. Available on-line new for \$100 (plus shipping) but available for sale at next SCAS meeting for minimum bid of \$50. In excellent condition. Lens covers. All glass is clean! Two 1.25" eyepieces: 10 & 25mm. I believe they are Kellners. Finder: Orion EZ Finder II. Instructions included. Age - 1 year. Proceeds from this sale go to the SCAS.

Any questions? Contact Len Nelson.



Photo by Len Nelson

Lunar Eclipse Star Party Feb. 20 at Old Adobe Elementary, Petaluma

FOUR SUCCESSFUL SCAS SCHOOL STAR PARTIES IN FEBRUARY

The break in the weather at the beginning of February gave us clear skies for three great viewing nights. On Friday, February 8, Merlin Combs, Tim Slater, David Simons, Loren Cooper and Lynn Anderson made the drive to Monte Rio where about 120 students, parents and teachers gathered for an astronomy night. The parent's club served star pasta soup and sandwiches. Several of the students had solar system displays and Lynn gave a PowerPoint presentation. The skies were clear, but there was no horizon, as the school is situated within the Russian River canyon, so we did not get to see Saturn.

On Saturday night, Lynn Anderson and Jerry McBride provided star viewing and a PowerPoint slide show at a private home above Healdsburg's Dry Creek Valley for the sixth graders from Sebastopol's SunRidge Charter School. The viewing location was in the middle of a vineyard with a great 360° horizon and fairly dark skies. Lynn and Jerry were joined by Elliott Dellorco and Noah Dove, SunRidge students who had just won telescopes at the SPARKS presentation the previous night. Needless to say, the boys were quite thrilled to be able to use their new telescopes on such a clear night.

Starting at 6:00 PM, Tuesday the 12th, Merlin, Loren Walt Bodley, Frank Siroky, Sean Jean and Lynn set up telescopes for about 500 students, parents and teachers at the Windsor Creek Elementary School's astronomy night. This annual event has all of the school's 125 third graders display their solar system projects in the multi-purpose room while SCAS volunteers provide star viewing, if the weather is clear. We were clouded out last year. There was a 6-day old moon to view. The school turned off the outside lights, which made for decent viewing of Mars, M-42, the Double Cluster, Pleiades and just about all telescopes turned to Saturn once it appeared above the trees in

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by
Herb
Larsen

WARNING

Use of this telescope may cause one or more of the following side effects

1. Sleepless nights:
2. Hypothermia:
3. Temporary Blindness: (viewing full moon w/o filter.)
4. Irritability: (Especially toward people with white lights.)
5. Heart Palpitations: (For example viewing Saturn for first time.)
6. Euphoria: (Especially after finding difficult NGC objects)

New law. All telescopes sold within the United States after July 1, 2008 must carry the above warning label.

SOCIAL AMENITIES

Many thanks to John Whitehouse for once again providing treats and coffee at the February meeting. You can contribute too...just pick a month and sign up with one of the Board members.

WELCOME NEW MEMBERS!

SCAS welcomes to membership Ralph & Karin Sellite of Santa Rosa and our Striking Sparks Winners Frank Demma, Noah Dove, Maxwell Hyde, Quincy Zlotnick, Michael Masters, and Elliot Dellorco.

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 FERGUSON OBSERVATORY PUBLIC VIEWING

Saturday, March 8

Solar Viewing: Noon - 4:00 PM

Night Viewing begins 7:00 PM

The Observatory features three telescopes: A 14-inch SCT with CCD camera in the East wing, an 8-inch refractor under the dome and a 24-inch Dobsonian in the West wing. 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.

Fees: No admission fee for the solar viewing, but donations are appreciated. The Park charges \$6 per vehicle for entry. A \$3 donation is requested from adults 18 and over for admission to the observatory during night viewing sessions.

NIGHT SKY SPRING SERIES

Session #3—Mar. 3, Session #4—Mar. 10

Session #5—Mar. 31

Classes held Mondays at 7PM. Each class includes a lecture on the constellations of the season, their history and mythology, and how to find objects within them. **Fees:** \$75 for the series of six presentations. (Single session fee is \$23). 10% discount for VMOA members. Classes are held at the Observatory. For information or to register: (707) 833-6979, <http://www.rfo.org> or nightsky@rfo.org

OBSERVING LAB

“Binaries (Winter)”—Sunday, Mar. 2

“Diffuse Nebulae, Star Formation, and Open Clusters” - An intensive telescope observing session after a brief presentation on the night’s theme. Handouts/Observing Lists provided. Attendance limited to 6. Fee: \$30. Two sessions per year with different observing lists. Lab begins 6:30 PM. Raincheck date: Mar. 5. For reservations, email: nightsky@rfo.org

RANDALL MUSEUM, SAN FRANCISCO

Mar. 25, 7:30 PM: “Stardust: The First Solid Sample Return Mission from Beyond the Moon”—Dr. Andrew Westphal, Stardust@home Project Director

In January 2006, the STARDUST MISSION returned to Earth the first solid extraterrestrial samples of material from a Jupiter-family comet called Wild2 and dust from the local interstellar medium. Over the last two years, laboratories all over the world have been carefully scrutinizing these samples. More than 23,000 volunteers have played a critical role in identifying particles in the Stardust interstellar dust collector through Stardust@home, a joint Berkeley/NASA/Planetary Society project.

Dr. Westphal will report on progress in the extremely challenging task of identifying, extracting and analyzing the first interstellar dust particles ever returned to terrestrial laboratories for study and the surprising results from these objects. Free. For directions visit: <http://www.randallmuseum.org/Default.aspx?tabid=95>

SRJC PLANETARIUM

“Mars, Next of Kin”

March 7 - April 13

Mars, seen in our sky this spring, is considered to be more like planet Earth than any of the other planets, more so in the past and less so now. Join us as we learn about this fascinating world: its past, present, and the possible journey of man to Mars.

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/>

MORRISON PLANETARIUM DEAN LECTURE SERIES

Mar. 31, 7:30 PM: “The Dark Side of the Universe”—Dr. Rachel Bean, Cornell University

Recent cosmological observations have provided an extremely puzzling insight into the nature of the universe. 95% of the universe’s contents are invisible or “dark,” with 25% being “dark matter” and the majority in a mysterious form labeled “dark energy.” Understanding the origins of the dark universe requires collaboration between theory and observation, and between astronomy and fundamental particle physics. This interdisciplinary endeavor represents one of the major challenges in physics today.

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 \$5 at the door or by email. Contact: 415/321-8000.

<http://www.calacademy.org/events/>

SSU OBSERVATORY PUBLIC VIEWING

Mar. 14, 8-10 PM: Moon, Mars and Orion 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). Follow signs to campus. Parking Lot F is most convenient. Call 707/664-2267 if it appears weather may force cancellation. <http://www.phys-astro.sonoma.edu/observatory/pvn.html>

Events

SCAS SCHOOL STAR PARTIES:

NEARING THE END OF STANDARD TIME

As this goes to email distribution (February 27), we have two more star parties on the calendar; Friday, February 29 at Evergreen Elementary in Rohnert Park. This star party could use at least four more volunteers. If this article reaches you before the 29th and you have time to volunteer, contact Len Nelson at lennelsn@comcast.net. Len is expecting around 400 students, parents and teachers to come out for this event.

The second star party will be in Healdsburg at the Fitch Mountain Elementary School on the Friday before the start of Daylight Savings Time, March 7 beginning at 7:00. It is expected that this event will draw another fairly large group of interested star watchers as this it is sponsored by the parent's club of both of Healdsburg's elementary schools. Contact Lynn Anderson at astroman@sonic.net. to volunteer for this star party.

Later in March, we have been asked to participate in the Mark West School District's Science Fair. This event will be held on Saturday, March 29 from 10:00 to 3:00. It would be nice to have one or two more volunteers to assist Lynn with solar viewing and some Night Sky Network activities. Lynn has a Coronado h-alpha filter for his Pronto and an 8" Thousand Oaks ND filter that someone with an 8" scope may use. Contact Lynn if you have time to donate at this event.

SONOMA STATE UNIVERSITY SERIES "WHAT PHYSICISTS DO"

Mondays at 4:00 PM

Darwin Hall Room 103 (Coffee at 3:30 PM)

Mar. 3—Demarcation: Is There a Sharp Line Between Science and Pseudoscience?

Dr. Raymond Hall of California State University, Fresno will discuss the philosophical attempts to define a boundary between the scientific and its pretenders and the application of this distinction in the areas of law, public policy, and education policy.

Mar. 10—The Role of Energy Efficiency in California's Efforts to Curb Global Warming

Devra Wang of the Natural Resources Defense Council will describe California's policies to spur energy efficiency, and its key role in cutting global warming pollution.

Mar. 17—Studies of the Terrestrial Upper Atmosphere with Astronomical Instruments

Dr. Tom Slanger of SRI International will describe how the study of sky spectra collected at major telescopes is leading to new insights into atomic and molecular processes and important upper atmospheric phenomena as diverse as atom recombination and space weather.

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

2008 GOLDEN STATE STAR PARTY

July 2-6

Early Registration is in full swing, and it looks like we will have a great turn out at this year's Golden State Star Party. The unrivalled new site near Adin, California, is as good as it gets, and has generated a lot of excitement in the astronomy community. GSSP now offers the darkest skies available to large groups in California, with virtually no light domes. The site features a huge observing field with minimal dust and no rocks, ideal for camping and equipment set-up. There are ample amenities and conveniences including showers, sanitary facilities, many nearby attractions, and on-site food service. RV's and imagers with their special needs can be easily accommodated this year. GSSP is non-profit and organized 100% by astronomers for astronomers. We believe that GSSP will rapidly become one of the best star parties in the country, rivaling OSP and TSP.

All are welcome, including people who are new to the hobby or don't own their own telescope. We have many seasoned astronomers who would be thrilled to share views, knowledge, and their sheer joy of the night sky. The whole idea behind GSSP is simply to provide the best possible venue for the pure enjoyment of Astronomy. The cost is \$45 for registration, camping, and site amenities (excluding food). After April 15, the fee increases to \$55. Your equipment can remain set up for the entire event. For registration and more information, visit <http://www.goldenstatestarparty.org>.

SILICON VALLEY ASTRONOMY LECTURE SERIES

Mar. 5, 7:00 PM: "New Worlds and Yellowstone: How Common are Habitable Planets?"—Astronomer Geoff Marcy

Star Trek and Star Wars would have us believe that the universe is teeming with habitable planets and advanced species of life. In reality, after the discovery of more than 250 planets orbiting other stars, both Earth-like planets and extraterrestrial intelligence have proved elusive. Soon, however, new telescopes will begin hunting such planets.

Join the scientists who has discovered more planets than anyone else in history in a discussion of what these telescopes are likely to find and whether they might spark a new era when we might begin communication with alien life.

Location: Foothill College's Smithwick Theater, El Monte Road and Freeway 280, Los Altos Hills. Parking on campus costs \$2. Call the series hot-line at 650-949-7888 for more information and driving directions. Free and open to the public.

COMING TO SCAS IN APRIL

"Star Maps: History, Artistry, and Cartography"
with Nick Kanas

Young Astronomers



Telescope Workshop

Learn to 'fine-tune' your Sparks telescope

YA Meeting Friday, March 14, 7:30 PM

Apple Blossom School, Sebastopol

Do you know how to calibrate and align your telescope so that it is functioning at its peak performance level? If not, or if you are not sure, do plan to come to this meeting! Bring your Sparks telescope and if you have a red laser calibration instrument that came with it, bring it too. We will also cover planispheres (how they work); cleaning your optics (and keeping them clean); how a reflecting telescope works.

Lastly, we will discuss the solar system. Do you really know how far apart the planets are? Learn a new gimmick for keeping some details in mind. Prepare to be entertained and educated. If clear after the meeting, we will relocate to the hill above the school to find some cool stuff in our heavens!

WEATHER SLYDERS

New on the SkyJinks Website: The Dust Bowl. Hot, loopy solar gases. Killer Katrina. Combining dramatic images of Earth and space weather with the challenge of an old-fashioned slider puzzle, the new "Slider" game on the SciJinks Weather Laboratory website will challenge you. Players pick from a rich variety of captioned images, including photos from the ground, photos from space, and artist's renderings. After picking a difficulty level (3x3, 4x4, 5x5 grids), the player slides the scrambled tiles around to make a whole picture again.

Go to <http://scijinks.gov/weather/fun/slider>

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, go west onto Bodega Ave. Continue almost two miles to Water Trough Rd. Turn left and go about 1/3 mile to the school, on your right.

YA ELECTED OFFICERS

PRESIDENT: Open

VP/PROGRAM DIRECTOR: Geoffrey Knoll

RECORDER: Open

NEWSLETTER EDITOR: Max Eliaser, Maxxedout@comcast.net

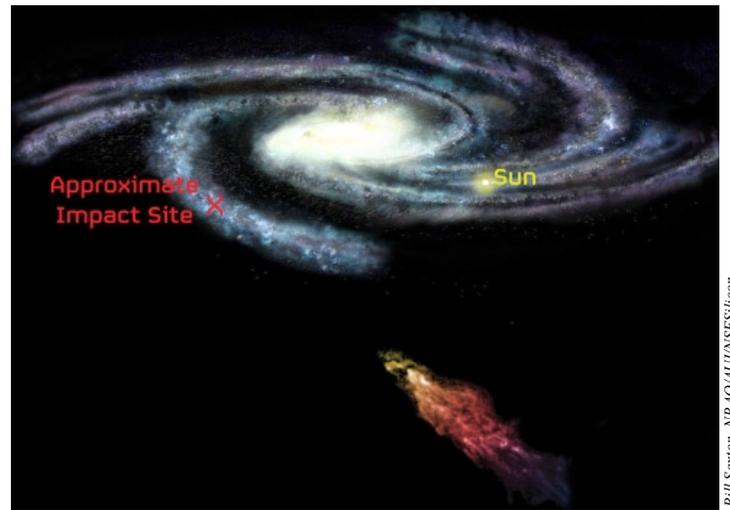
LIBRARIAN: Open

ADULT ADVISOR: Gary Jordan 829-5288, Sieramolly@comcast.net

YA BOARD ELECTIONS AT MARCH MEETING

At the March Young Astronomers meeting we will be holding elections to fill the two current YA board openings: President and Recorder. Responsibilities of the president include welcoming guests, giving announcements, and introducing guest presenters at our meetings. The president also coordinates our YA board meetings (held the half hour immediately before our monthly meetings), at which the YA board plans topics for future meetings, and future YA activities. The recorder is responsible for taking brief notes at our monthly board meetings, giving us a record of items discussed and decisions made by the board.

If you are interested in running for one of these positions and haven't already told Gary Jordan or Len Nelson of your interest, please e-mail Gary at Sieramolly@comcast.net, so you can be included on the ballot.



Artist's conception of Smith's Cloud colliding with the Milky Way in 20 million to 40 million years.

Smith's Cloud

by Alex Katz, Young Astronomer

Thinking about homework? Tired of the wet weather? Here's something new to think about: a giant cloud of hydrogen will collide with our galaxy in about 40 million years. But don't worry, this amazing cloud will hit far away from Earth's position in the galaxy.

The cloud, called Smith's Cloud, contains enough hydrogen to make a million stars like the Sun. It is eleven thousand light-years long and 2,500 light-years wide, and it is only 8,000 light-years away from our galaxy. It is speeding toward our galaxy at more than 150 miles per second, and is expected to strike the Milky Way at an angle of about 45 degrees.

"This is most likely a gas cloud left over from the formation of the Milky Way or gas stripped from a neighbor galaxy. When it hits, it could set off a tremendous burst of star formation. Many of those stars will be very massive, rushing through their lives quickly and exploding as supernovae. Over a few million years, it'll look like a celestial New Year's celebration, with huge firecrackers going off in that region of the Galaxy," said Felix J. Lockman, of the National Radio Astronomy Observatory (NRAO).

The Smith Cloud is named after Gail Bieger (formerly Gail Smith), who discovered it in 1963 while she was an astronomy student at Leiden University in the Netherlands. For decades after it was discovered, the available images did not have much revealing detail. But recently, Lockman at the NRAO used a radio telescope to map 40,000 locations in the Smith Cloud and piece together a picture of what it looks like. It's clear from the image that the Smith Cloud is falling into the Milky Way—there's no question about its direction.

Sources: National Radio Astronomy Observatory/ National Science Foundation; Richard Harris, National Public Radio

NASA SpacePlace

Invisible Spiral Arms

by Patrick Barry

At one time or another, we've all stared at beautiful images of spiral galaxies, daydreaming about the billions of stars and countless worlds they contain. What mysteries—and even life forms—must lurk within those vast disks?

Now consider this: many of the galaxies you've seen are actually much larger than they appear. NASA's Galaxy Evolution Explorer, a space telescope that "sees" invisible, ultraviolet light, has revealed that roughly 20 percent of nearby galaxies have spiral arms that extend far beyond the galaxies' apparent edges.

Some of these galaxies are more than three times larger than they appear in images taken by ordinary visible-light telescopes.

"Astronomers have been observing some of these galaxies for many, many years, and all that time, there was a whole side to these galaxies that they simply couldn't see," says Patrick Morrissey, an astronomer at Caltech in Pasadena, California, who collaborates at JPL.



In this image of galaxy NGC 1512, red represents its visible light appearance, the glow coming from older stars, while the bluish-white ring and the long, blue spiral arms show the galaxy as the Galaxy Evolution Explorer sees it in ultraviolet, tracing primarily younger stars.

The extended arms of these galaxies are too dim in visible light for most telescopes to detect, but they emit a greater amount of UV light. Also, the cosmic background is much darker at UV wavelengths than it is for visible light. "Because the sky is essentially black in the UV, far-UV enables you to see these very faint arms around the outsides of galaxies," Morrissey explains.

These "invisible arms" are made of mostly young stars shining brightly at UV wavelengths. Why UV? Because the stars are so hot. Young stars burn their nuclear fuel with impetuous speed, making them hotter and bluer than older, cooler stars such as the sun. (Think of a candle: blue flames are hotter than red ones.)

Ultraviolet is a sort of "ultra-blue" that reveals the youngest, hottest stars of all.

"That's the basic idea behind the Galaxy Evolution Explorer in the first place. By observing the UV glow of young stars, we can see where star formation is active," Morrissey says.

The discovery of these extended arms provides fresh clues for scientists about how some galaxies form and evolve, a hot question right now in astronomy. For example, a burst of star formation so far from the galaxies' denser centers may have started because of the gravity of neighboring galaxies that passed too close. But in many cases, the neighboring galaxies have not themselves sprouted extended arms, an observation that remains to be explained. The Galaxy Evolution Explorer reveals one mystery after another!

"How much else is out there that we don't know about?" Morrissey asks. "It makes you wonder."

Spread the wonder by seeing for yourself some of these UV images at www.galex.caltech.edu. Also, Chris Martin, principle scientist for Galaxy Evolution Explorer—or rather his cartoon alter-ego—gives kids a great introduction to ultraviolet astronomy at <http://spaceplace.nasa.gov/en/kids/live#martin>.

—Article provided by JPL/NASA

February School Star Parties *(from Page 3)*

the east. Then the outside lights came on at 8:00, so we packed up and went home.

For the Lunar Eclipse on Wednesday, February 20, the SCAS had a star party at Old Adobe Elementary in Petaluma where we entertained about 50 parents and third grade students.

The sky conditions looked poor and foreboding early on but we were lucky (very lucky) and it cleared up enough to get some decent views of the eclipsed moon. Saturn was just 8:00 of the Moon and wowed our audience too. Merlin Combs, Al Stern, Blaine Eldred (YA) and Len Nelson represented the SCAS.



Blaine Eldred with his 2007 Sparks scope; the partially eclipsed Moon is in the background.

Photo by Len Nelson

**Sonoma County
Astronomical Society**

P.O. Box 183
Santa Rosa, CA 95402



Sonoma Skies
March 2008

MARCH 12

Dr. Scott Severson, SSU

**Adaptive Optics:
A Sharper View of the
Universe**