THE OBSERVER

SAN BERNARDINO VALLEY AMATEUR ASTRONOMERS

Member THE ASTRONOMICAL LEAGUE

"Celebrating Forty-Eight Years of Amateur Astronomy"

VOLUME #48 ISSUE #02 **Frebuary 2006**

"Forty Deepsky Favorites." Chris Clarke and Martin Carey to give presentation

Member Gallery: Jerry Day will present his recent images

The Rosette Nebulia is shown here. Look for more images in the Color PDF Newsletter.

MEETING: February 18, 2006--7:00PM

"Bring Scopes for Lunar and Planetary Observing"

SAN BERNARDINO COUNTY MUSEUM

CALIFORNIA STREET EXIT FROM INTERSTATE 10

PRE-MEETING DINNER: 5:00PM HOMETOWN BUFFET, LOMA LINDA

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SBVAA

CALENDER OF EVENTS 2006

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

February 18.....Meeting (3rd Saturday)
February 25.....Star Party
March 18.....Meeting (3rd Saturday)
March 25.....Star Party
April 15.....Meeting (3rd Saturday)
April 29.....Star Party
May 20.....Meeting (3rd Saturday)
May 27.....Star Party

February Meeting:

"Forty Deepsky Favorites."
Chris Clarke will be the main presenter, and Martin Carey will supplement the talk also. Jerry Day will show some of his most recent images.

March Telecon: Stardust project with Dr. Bryan Mendez

On March 28 at 6 pm (Pacific) Dr. Mendez will discuss the recent findings of the dust recovered from the recent Stardust mission and the upcoming release of the data for the Stardust@home project. Join us for cutting edge information on one of the latest, exciting missions in astronomy today!

More information about this exciting teleconference will be coming soon! For the latest updates on Night Sky Network happenings be sure to log in to the club website at http://nightsky.jpl.nasa.gov/.

email
articles and photos for
The Observer to:
WSMyer@aol.com

MESSIER MARATHON
is coming
MARCH 24-26, 2006

Owl Canyon
Campground

President's Message

By Martin L. Carey
martincarey@sbcglobal.net

Winter is back, California style, and the clouds that come with it. While it was warm and clear, I snuck in some views of Saturn and the moon out on the driveway. Last meeting, our members brought out several telescopes to share the glory of the planets and Orion. The air was so clear that we could make out detail in M42 in spite of all the lights around us.

Last meeting we got a little taste of telescope making, served up by Steve Miller Dave Morris, and Rudy Rodriguez, while Tom showed us some home-built astrophoto equipment and explained a few of his techniques. Rudy brought an antique homebuilt 4.5" reflector that was at least 70 years old. It pulled in Saturn's rings nicely with some coaxing. You could see how building a telescope is not all that hard. There are other hobbies, such as restoring cars, for instance, that are far more time-consuming and bank-breaking. My wife has a certain gratitude that I have not taken up rescuing old cars, and this gratitude allows me some freedom at the RTMC vending booths. Our hobby compares favorably that way.

Now is the best time to view Saturn, since its closest approach to Earth just occurred a few weeks ago. It will be slowly closing its rings in the next few years, as its orbit takes it back towards another edge-on presentation. Saturn's rings are visible in even the smallest telescope, even those terrible junk telescopes found in department and toy stores. The shadow of the globe on the rings is visible in good small telescopes, while the crepe ring (the faint gray ring closest to the globe) can be seen with a good 4" scope. By the way, I don't advise that you get a terrible junk telescope.

We had a successful outreach to Smiley Elementary School in Redlands on January 23rd, with about 150 to 200 people coming by throughout the evening. The night was chilly, but the viewers were enthusiastic, including the teachers who came by to thank us for coming out.

Last week I had a little scare, thinking that I had heart problems, and spent a day at the hospital getting tested. The ticker is fine, but I have to take better care of what and how much goes into the stomach. Hmm, this club is an eating club. How about making this the Exercise-and-Eat-Your- Veggies club. No? See you at Hometown Buffet!

This meeting Chris Clarke and I will present a selection of 40 of our favorite late winter and spring deep sky objects. We hope this can help you locate some of those gems next time you are under the skies again.

Outreaches: Past and Future

By Chris Clarke

Our two past outreaches were unqualified successes. Our visit to Smiley School in Redlands had at least 120 folks peek through at least a half dozen scopes at Mars, Saturn and numerous other goodies. The smoke from a nearby fire did not hamper viewing, nor did the raging Santa Ana winds that were plaguing the west end of the valley. However, yours truly missed the event because of gridlocked traffic in San Bernardino! I called Rudy Rodriguez on his cell phone and he said that all was well, with plenty of volunteers showing up and viewing conditions fine. It felt strange not being there. I can only recall missing one other outreach in the last ten years, and that was when my garage door started to break apart just as I was leaving for the event!

Meanwhile, our annual visit to Kingsbury School had over 200 people spending over an hour and a half looking through about ten telescopes at the moon, Saturn and M42. It was a grand night, with the evening temperature feeling like early fall, no wind and very good seeing, although some high clouds passed through. The parents enjoyed the viewing as much or more than the kids, too!

In March, we have three events scheduled. On Wednesday, March 8, we'll be at Highland Grove School in Highland. It is a brand new school at 7700 Orange Street.To get there, get to Baseline in Highland, go past Boulder on Baseline, then turn right onto Webster and then go to Eucalyptus and turn left. The school is on the corner of Eucalyptus and Orange Streets. Set up time is 6:00 pm and viewing is from 6:30 to
8:00 pm.

On Saturday, March 11, we will have a "Saturn Party" at the County Museum from 7:00 to 9:00 pm (set up at 6:30) and on Thursday, March 23, we'll visit Thompson School in Highland. We've been to this school many times before. To get there, take Baseline to Church St. in Highland (Church St is just past HWY 30). Turn south onto Church and go a short way and the school is on the left side of the street. The address is 7401 Church St. Set up is at 6:00 and viewing is from 6:30 to 8:30 pm.

Once again, we always have a great time sharing our telescopes with the eager and curious kids and their parents. For most of them, it is there first real look through a telescope and one that they will never forget. In this age of vicarious experience, it is a wonderful thing to give individuals the opportunity to personally experience parts of the remote universe. I invite all members to do this, at least once in a while, since it creates a most satisfying feeling.

MARS ROVERS UPDATES

Hardened Lava Meets Wind on Mars

NASA's Mars Exploration Rover Spirit used its microscopic imager to capture this spectacular, jagged mini-landscape on a rock called "GongGong." Measuring only 3 centimeters (1.2 inches) across, this surface records two of the most important and violent forces in the history of Mars -- volcanoes and wind.

GongGong formed billions of years ago in a seething, stirring mass of molten rock. It captured bubbles of gases that were trapped at great depth but had separated from the main body of lava as it rose to the surface. Like taffy being stretched and tumbled, the molten rock was deformed as it moved across an ancient Martian landscape. The tiny bubbles of gas were deformed as well, becoming elongated. When the molten lava solidified, the rock looked like a frozen sponge.

Far from finished with its life, the rock then withstood billions of years of pelting by small sand grains carried by Martian dust storms that sometimes blanketed the planet. The sand wore away the surface until, little by little, the delicate strands that enclosed the bubbles of gas were breached and the spiny texture we see today emerged.

Even now, wind continues to deposit sand and dust in the holes and crevices of the rock.

Similar rocks can be found on Earth where the same complex interplay of volcanoes and weathering occur, whether it be the pelting of rocks by sand grains in the Mojave desert or by ice crystals in the frigid Antarctic.

GongGong is one of a group of rocks studied by Spirit and informally named by the Athena Science Team to honor the Chinese New Year (the Year of the Dog). In Chinese mythology, GongGong was the god-king of water in the North Land. When he sacrificed his life to knock down Mount BuZhou, he defeated the bad Emperor in Heaven, freed the sun, moon and stars to go from east to west, and caused all the rivers in China to flow from west to east.

Spirit's microscopic imager took this image during on the rover's 736th day, or sol, of exploring Mars (Jan. 28, 2006). The rock lies in the "Inner Basin" between "Husband Hill" and "McCool Hill" in Gusev Crater. Spirit acquired the image while the rock was fully shadowed, with diffuse illumination mostly from the top in this view.

CASSINI UPDATE

Smooth Surface of Telesto February 14, 2006

The Cassini spacecraft passed within a cosmic stone's throw of Telesto in October, 2005 capturing this shot of the tiny Trojan moon. Telesto (24 kilometers, or 15 miles across) appears to be mantled in fine, icy material, although a few craters and some outcrops and/or large boulders are visible. Its smooth surface does not appear to retain the record of intense cratering that most of Saturn's other moons possess.

The image was taken in polarized green light with the Cassini spacecraft narrow-angle camera on Oct. 11, 2005, at a distance of approximately 14,500 kilometers (9,000 miles) from Telesto. The image scale is 86 meters (283 feet) per pixel.

The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colo.

Galactic Center Found To Glow Unevenly

Munich, Germany (SPX) Feb 15, 2006

An international team of more than 100 astrophysicists said they have detected very-high-energy gamma rays emanating from the huge gas clouds known to pervade the center of the Milky Way galaxy.

The team, using the High Energy Stereoscopic System telescopes in Namibia, said they expect the gamma rays to result from even more energetic cosmic-ray particles that permeate the entire galaxy and crash into the atmosphere. The extreme sensitivity of the HESS instruments in this energy range make possible precise measurements of the intensity and energies of the gamma rays, they said.

In the galaxy's central region, cosmic-ray particles typically are more energetic than those measured falling into Earth's atmosphere. Possible reasons why include the echo of a supernova that exploded some 10,000 years prior to the emergence of the clouds, or maybe even a burst of natural particle acceleration from the super massive black hole at the Milky Way's center.
In a recent issue of the journal Nature, the scientists reported that the giant clouds of hydrogen encompass an amount of gas equivalent to 50 million times the mass of the Sun, and the HESS gamma-ray telescopes revealed that the clouds are glowing with very-high-energy gamma rays.

One key issue in understanding cosmic rays is their distribution in space - whether they permeate the entire galaxy uniformly, or whether their density and energy distribution vary, depending on their location - such as their proximity to cosmic particle accelerators.

Direct measurements of cosmic rays can only taken within our solar system, located about 25,000 light-years from the galactic center, but a new observation technique allows astrophysicists to investigate cosmic rays originating from more distant locations, by detecting when a cosmic-ray particle collides with an interstellar gas particle, producing gamma rays.

The Milky Way's center contains examples of every type of exotic object known to astronomers, including remnants of supernova explosions and a super-massive black hole. It also contains huge quantities of interstellar gas, which tends to clump into clouds. If gamma rays are detected from the direction of such a gas cloud, scientists can infer the density of cosmic rays at the location of the cloud, because the energy intensity and distribution of these gamma rays parallels that of cosmic rays.
Scientists have used this technique at low energies - around 100 million electron volts (man-made accelerators reach energies up to 1,000,000 million electronvolts) - to map cosmic rays in the Milky Way. At really high energies - the true domain of cosmic-ray accelerators - no instrument had been sensitive enough to detect interstellar gas clouds shining in the range of very-high-energy gamma rays. Now, for the first time, the HESS telescopes have demonstrated the presence of cosmic rays in the galactic central region.

The HESS data show the density of cosmic rays exceeds that in the solar neighborhood by a significant factor, and the difference increases as the energy increases, implying the cosmic rays have been recently accelerated. The data suggest that the clouds have been illuminated by a nearby cosmic-ray accelerator, which was active for at least 10,000 years. Likely candidates include a gigantic stellar explosion that apparently went off near the heart of the galaxy, or the super-massive black hole at the galaxy's center.

The HESS system includes four 13-meter telescopes and is considered the most sensitive detector of very-high-energy gamma rays. These are absorbed in the atmosphere, where they give a short-lived shower of particles. The HESS telescopes detect the faint, short flashes of bluish light the particles emit (named Cherenkov light, lasting a few billionths of a second), collecting the light with large mirrors that reflect onto extremely sensitive cameras.

An Invitation To Join

The San Bernardino Valley Amateur Astronomers

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

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

Make check payable to: San Bernardino Valley Amateur Astronomers.

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

Name_____

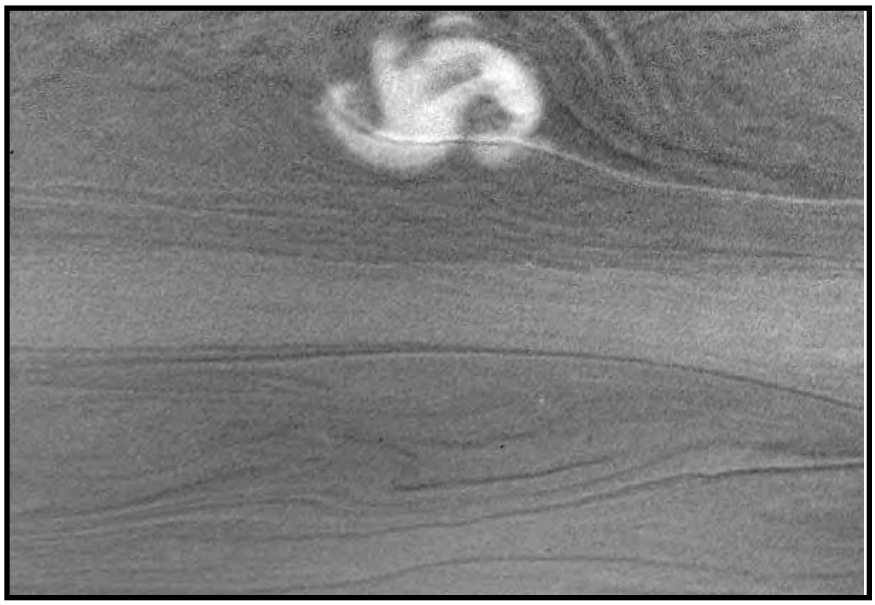
Address_____

City and State_____

Zip_____**Phone**_____

Internet E-mail Address_____

Storm at Night (Reprojected View) February 14, 2006

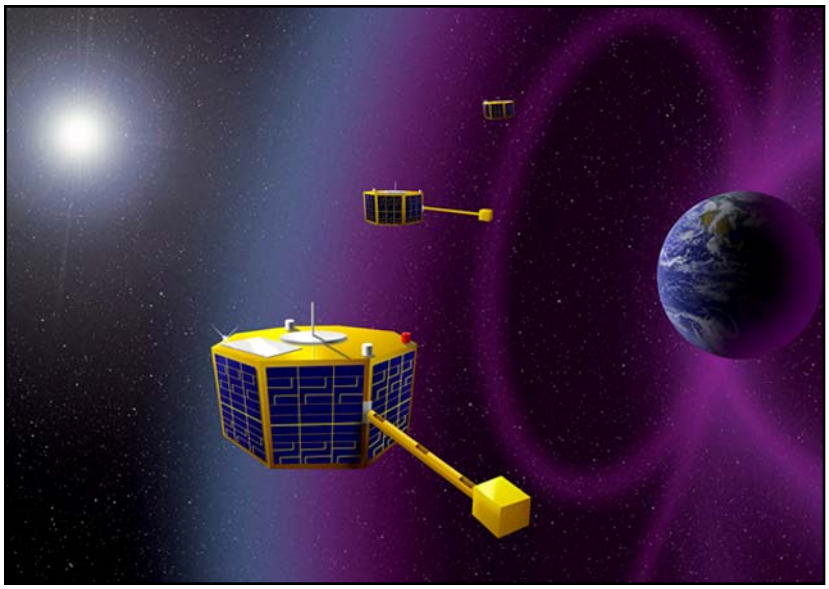


This image shows a rare and powerful storm on the night side of Saturn.
Light from Saturn's rings (called "ring-shine") provided the illumination, allowing the storm and other cloud features to be seen.
The storm is a possible source of radio emissions believed to come from electrical discharges (lightning) deep in Saturn's atmosphere. Cassini began detecting the radio emissions, which are like those from lightning, on January 23. At about the same time, amateur astronomers reported that a storm had appeared in Saturn's southern hemisphere at minus 35 degrees latitude. Cassini was in the wrong place to take good images of the storm on the day side, since the planet showed only a thin crescent to the spacecraft, but night side imaging was possible using light from the rings.
The image shows the storm as it appeared to the Cassini imaging system on January 27, 2006. The storm's north-south dimension is about 3,500 kilometers (2,175 miles); it is located at minus 36 degrees (planetocentric) latitude and 168 degrees west longitude. This places it on the side of the planet that faces the spacecraft when the radio emissions are detected; the radio emissions shut down for half a Saturnian day when the storm is on the other side.
This view was derived from an original Cassini image by reprojecting it as a cylindrical map and enhancing the contrast to bring out faint features. See Storm at Night (Limb View) for the original image.
No lightning flashes are visible in the image. They would look like medium-sized bright spots, since the light would spread out before it reaches the cloud tops. Non-detection does not mean that the lightning is absent, however. Lightning might be too faint to stand out above background or too deep to be seen through the thick clouds. Bad luck is another possibility: The camera might have missed the strong flashes during the 10 seconds that the shutter was open.
A narrow-cloud band crosses the storm from left to right. It is illuminated by the rings from the north and is brighter on that side. Cassini scientists are looking forward to an extensive night side image set, designed to look for lightning. That set will be collected during the first half of this year.
The view was obtained in visible light with the Cassini spacecraft narrow-angle camera at a distance of approximately 3.5 million kilometers (2.2 million miles) from Saturn. The image scale in the original image was 20 kilometers (12 miles) per pixel.
The Cassini-Huygens mission is a cooperative project of NASA, the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology in Pasadena, manages the mission for NASA's Science Mission Directorate, Washington, D.C. The Cassini orbiter and its two onboard cameras were designed, developed and assembled at JPL. The imaging operations center is based at the Space Science Institute in Boulder, Colo.
For more information about the Cassini-Huygens mission visit http://saturn.jpl.nasa.gov . The Cassini imaging team homepage is at http://ciclops.org .

NASA Space Place

Micro-sats with Macro-potential

By Patrick L. Barry



The Space Technology 5 mission will test crucial micro-satellite technologies

Future space telescopes might not consist of a single satellite such as Hubble, but a constellation of dozens or even hundreds of small satellites, or "micro-sats," operating in unison.

Such a swarm of little satellites could act as one enormous telescope with a mirror as large as the entire constellation, just as arrays of Earth-bound radio telescopes do. It could also last for a long time, because damage to one micro-sat wouldn't ruin the whole space telescope; the rest of the swarm could continue as if nothing had happened.

And that's just one example of the cool things that micro-sats could do. Plus, micro-sats are simply smaller and lighter than normal satellites, so they're much cheaper to launch into space.

In February, NASA plans to launch its first experimental micro-sat mission, called Space Technology 5. As part of the New Millennium Program, ST5 will test out the crucial technologies needed for micro-sats—such as miniature thrust and guidance systems—so that future missions can use those technologies dependably.

Measuring only 53 centimeters (20 inches) across and weighing a mere 25 kilograms (55 pounds), each of the three micro-sats for ST5 resembles a small television in size and weight. Normal satellites can be as large and heavy as a school bus.

"ST5 will also gather scientific data, helping scientists explore Earth's magnetic field and space weather," says James Slavin, Project Scientist for ST5.

Slavin suggests some other potential uses for micro-sats:

A cluster of micro-sats between the Earth and the Sun—spread out in space like little sensor buoys floating in the ocean—could sample incoming waves of high-speed particles from an erupting solar flare, thus giving scientists hours of warning of the threat posed to city power grids and communications satellites.

Or perhaps a string of micro-sats, flying single file in low-Earth orbit, could take a series of snapshots of violent thunderstorms as each micro-sat in the "train" passes over the storm. This technology would combine the continuous large-scale storm monitoring of geosynchronous weather satellites—which orbit far from the Earth at about 36,000 kilometers' altitude—with the up-close, highly detailed view of satellites only 400 kilometers overhead.

If ST5 is successful, these little satellites could end up playing a big role in future exploration.

The ST5 Web site at nmp.jpl.nasa.gov/st5 has the details. Kids can have fun with ST5 at spaceplace.nasa.gov, by just typing ST5 in the site's Find It field.

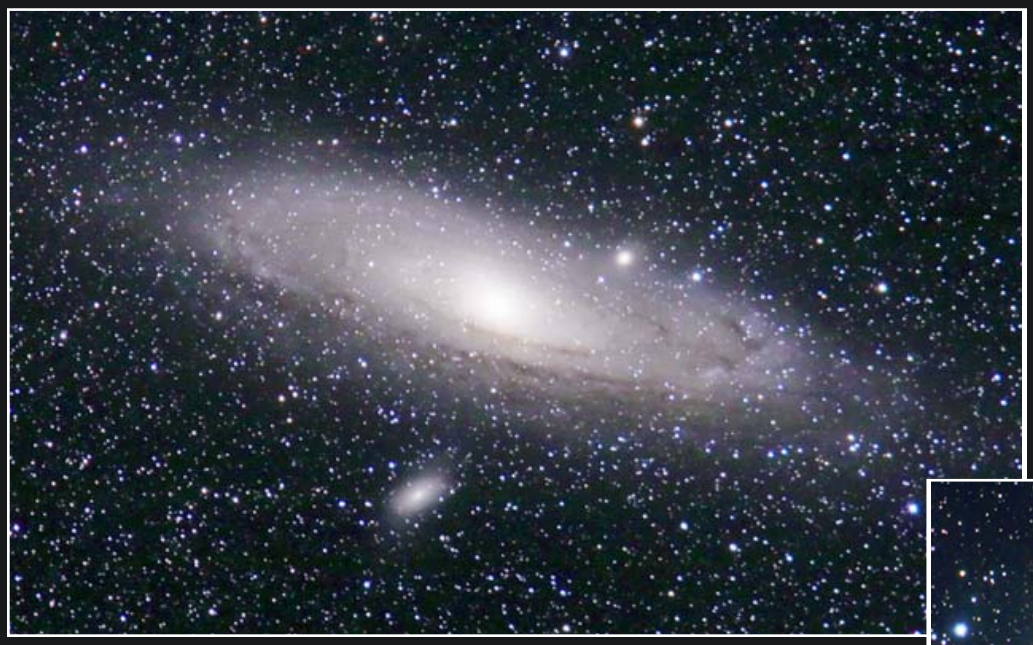
This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

Member Gallery: Jerry Day

The M45 image is 'first light' for the new 20Da camera – literally straight out of the box & setup in the dark on the last astrophoto outing (November, 2005) to Red Rock Canyon State Park. The image is a composite of 4 X 5 min exposures using in-camera noise reduction, ISO 400, & 70-200 mm f/2.8 ED IS lens – very marginal seeing conditions – not too bad for first try. Also, here's M31 using 2X tele-extender & composite of exposures ranging from 6 min @ f/2.8 @ ISO 400, 800, & 1600. The California, Horse Head, and Rosette Nebula images are also stacked – 4 X 6 Min. @ ISO 400.

The other constellation images were taken in January at Arches National Park in Utah – at or near the Balanced Rock formation. Exposures are 90 seconds @ f/5.6 @ ISO 1600 using a tracking mount and star filter with the Canon 20Da and 17mm lens. A 1,000,000 C.P. spotlight was used together with gel filters to light paint the foreground rocks.

Jerry



Member Gallery: Jerry Day

STAR PARTY: Saturday, February 25, 2006
at Johnson Valley, CA

See Tom Lawson, Star Party Coordinator,
to receive club online updates and color PDF Newsletter.

MEETING: FEBRUARY 18, 2006--7:00PM

"Forty Deepsky Favorites."

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"Bring Scopes for Lunar and Planetary Observing"

SAN BERNARDINO COUNTY MUSEUM

2024 ORANGE TREE LANE, REDLANDS, CA

CALIFORNIA STREET EXIT FROM INTERSTATE 10

PRE-MEETING DINNER: 5:00PM, HOMETOWN BUFFET, LOMA LINDA

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AMATEUR ASTRONOMERS

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