

EPHEMERIS

February 2011

SJAA Activities Calendar

Jim Van Nuland

January (late)

- 28 Astronomy Class at Houge Park. 7:00 p.m. The topic: Winter Constellations and Highlight Objects.
- 28 Houge Park star party. Sunset 5:22 p.m, 23% moon rises 3:53 a.m. Star party hours: 7:00 until 10:00 p.m.
- 29 Dark-Sky weekend. Sunset 5:29 p.m, 15% moon rises 4:46 a.m.

February

- 5 Dark-Sky weekend. Sunset 5:37 p.m, 8% moon sets 8:25 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 11 Houge Park star party. Sunset 5:43 p.m, 59% moon sets 2:12 a.m. Star party hours: 7:00 until 10:00 p.m.
- 19 **General Meeting.** Our speaker is Dr. Eric Young, SOFIA Mission Manager for the NASA/SOFIA Mission. Board meeting at 6:30; General Meeting at 8:00. **Election of Board Members.**
- 25 Astronomy Class at Houge Park. 7:00 p.m. The topic: TBA.
- 25 Houge Park star party. Sunset

- 5:58 p.m, 38% moon rises 2:42 a.m. Star party hours: 7:00 until 10:00 p.m.
- 26 Dark-Sky weekend. Sunset 5:59 p.m, 28% moon rises 3:30 a.m.

March

- 5 Dark-Sky weekend. Sunset 6:06 p.m, 2% moon sets 7:14 p.m. Henry Coe Park's "Astronomy" lot has been reserved. **This is the primary weekend for a Messier Marathon.**
- 11 Astronomy Class at Houge Park. 7:00 p.m. The topic: our moon.
- 11 Houge Park star party. Sunset 6:11 p.m, 42% moon sets 12:58 a.m. Star party hours: 7:00 until 10:00 p.m.
- 13 **DST Starts at 2 a.m.** Advance clocks one hour.
- 19 **General Meeting.** Our speaker is TBD. Board meeting at 6:30; General Meeting at 8:00.
- 25 Houge Park star party. Sunset 7:24 p.m, 54% moon rises 2:26 a.m. Star party hours: 8:15 until 10:15 p.m.
- 26 Dark-Sky weekend. Sunset 7:25 p.m, 43% moon rises 3:10 a.m.

The Board of Directors meets before each general meeting at 6:30 p.m. All are welcome to attend.

The Shallow Sky

Searching for Spots

Akkana Peck

February evenings are still a good time to catch Jupiter in the early evening sky, and see how the SEB is darkening. The planet is moving north and has just crossed the celestial equator, so it'll be fairly high in the sky even when it's past the meridian.

Mars, Uranus and Neptune are all too close to the sun to be of much interest this month.

Just after nightfall around the last week of February, look for a faint band of light stretching upward along the ecliptic. That's the Zodiacal Light, and you'll get a good viewing opportunity through the first week in March.

Really, most of the planet activity is in the dawn sky. Mercury is only visible briefly at the very beginning of February, but Venus shines brilliantly all month, and Saturn is in the morning sky as well.

And after you've looked at the morning planets, leave that telescope out and put on a solar filter. How 'bout that sun?

We're supposedly nearing solar maximum — back in 2006 NASA published a prediction that this solar cycle was going to be an especially active one, peaking "in 2010 or 2011".

And now ... where are the sunspots? Nowhere, that's where! A few measly spots

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show up from time to time, but mostly the sun's face is all too clean. And the new prediction is that the cycle won't peak until May 2013 ... and even then, it'll probably be the lowest cycle since 1928, with a predicted sunspot number of only 90 (vs. 132 at the last maximum, back in 2001).

Just goes to show, you can't trust anything! Even something as seemingly reliable as the sun! That's what you get when you stick your planet in an orbit around a variable star.

Of course, the unexpectedly low sunspot number is causing lots of people to jump in and blame things like the current cold winter on our underactive sun. Yes, fewer sunspots do mean a cooler sun. Although sunspots themselves are cooler areas on the sun's surface, more sunspots mean higher solar output, for reasons that aren't entirely clear — perhaps higher temperatures in the bright halo around each sunspot, or perhaps as a result of the intense magnetic activity associated with sunspots.

Whatever the reason, fewer sunspots means a cooler sun, so ... climate change! Something to counteract global warming! Woohoo, maybe we can go ahead and keep driving that SUV!

Well, er, not really. In fact, sunspots are probably a fairly minor factor in climate here on earth.

Take the Maunder Minimum. Starting around 1645, this long period of extremely low sunspot activity corresponded with the peak of the "Little Ice Age", a period of cooler temperatures and increased glaciation in Europe. Of course, we don't know much about what the sun was doing before the Maunder Minimum — only three sunspot cycles had elapsed since Galileo first trained a telescope on the sun in 1611— but those first three solar cycles observed by Galileo and

his contemporaries showed quite a few more sunspots.

And yet ... the cooling of the Little Ice Age started long before the Maunder Minimum. An increase in oceanic ice began as early as 1250, 400 YEARS early, and the climate continued to get colder all the way through the late 1600s. That's a lot of time to be blaming on a sunspot cycle or two.

Outgoing SJAA President: A Thank You

Mark Wagner

This year, for the first time, an SJAA president will leave office as a result of term limits. Rich Neuschaefer is deserving of our thanks, for leading the SJAA to a number of accomplishments during his tenure. Here are some of the club's accomplishments under his leadership:

1. SJAA completed a multi-year negotiation with the City of San Jose for continued use of Houge Park for club events. The SJAA's contract with the City extends into 2015.
2. A cohesive and cooperative environment on the club's Board of Directors. Having been a club member for many years, I can say with certainty that I have not seen such a smoothly functioning board. Of course, I am not familiar with all past boards, but this is certainly true to my experience.
3. The SJAA loaner telescope program has taken its first major step at replacing old "kludgy" equipment with modern commercially made gear appropriate for beginners. Old equipment is being phased out via the SJAA's annual auction and swap.
4. The club's newsletter, the Ephemeris has transitioned to being delivered mostly electronically. This was important as printing and mailing the newsletter represented the single most costly budget item for the club, and was constantly putting SJAA at risk of operating in deficit.
5. A new dues structure was implemented, to provide members a

So our climate is still warming, and you're still justified in getting on the waiting list for a Nissan Leaf. But meanwhile, on days when it's clear, pull out that solar filter (the safe kind that goes in front of the aperture) and see if you can find some sunspots. If there aren't any ... well, it's still a good excuse to be outside soaking up a little vitamin D on a cold winter day.

sensible and cost appropriate choice of print or electronic versions of the newsletter, insuring the club will stay out of deficit spending.

6. Term limits were instituted on the position of club president, to assure that nobody "burns out" due to either length of service in the position, or taking on too much individual responsibility.
7. The club's by-laws were revised to clarify membership details, and provide methods to assure a "peaceable kingdom" with the SJAA.
8. The Gregory Award (outstanding contributions to amateur astronomy) has again become an annual event, with a formalized nominating committee, and two recipients during 2009 and 2010.
9. A new program was instituted to donate astronomical equipment to deserving/needy individuals or groups, worldwide.
10. SJAA continued its participation with CalStar, the annual star party at Lake San Antonio, California.
11. Established a PR chair, to promote SJAA and advertise its activities.

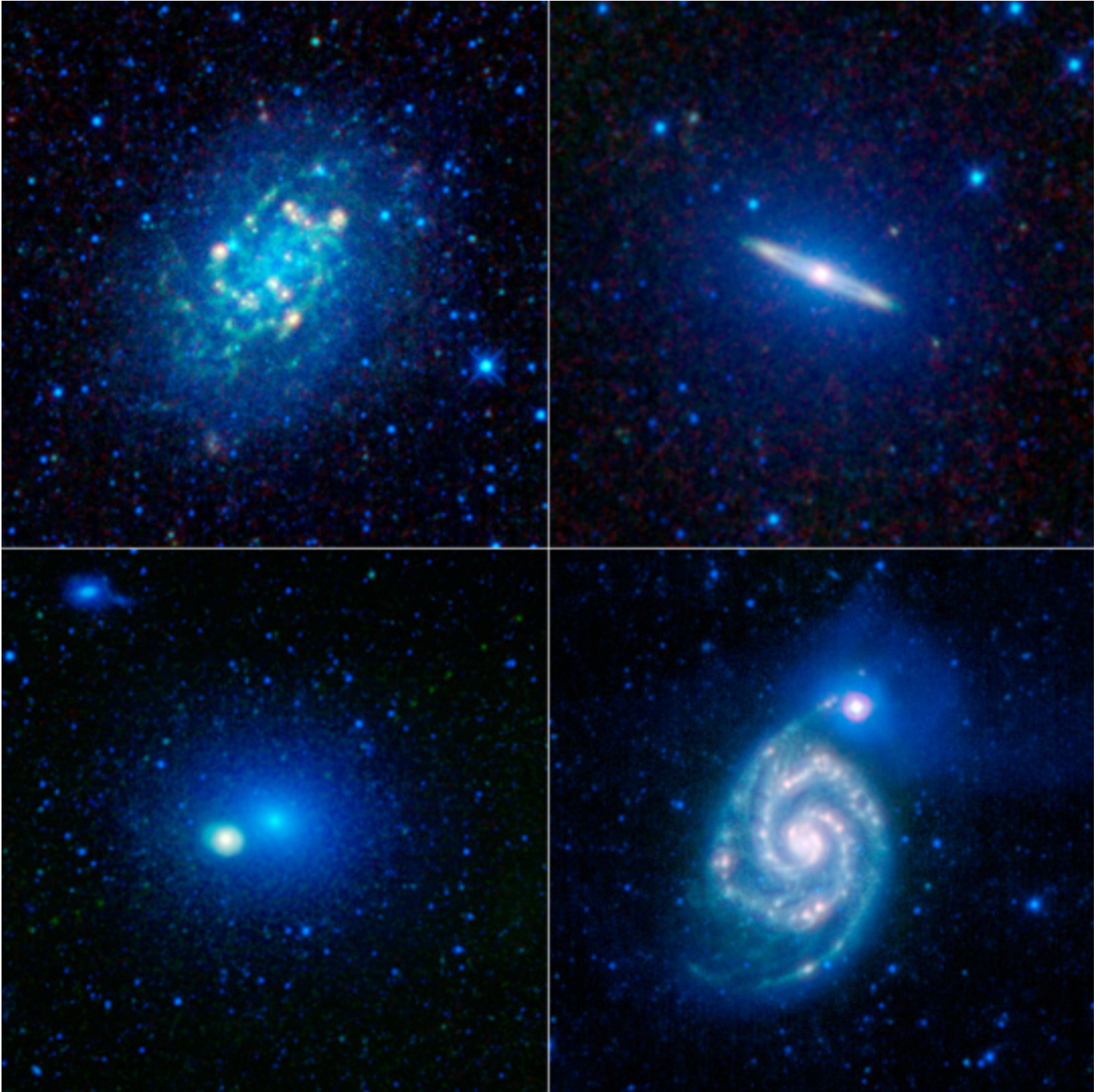
I'm certain the list is longer, but these are the items that quickly come to mind.

Those of you who see Rich at Houge Park star parties, SJAA General Meetings, or at Lick Observatory, take a moment to personally thank him for the wonderful job he has done.

Thank you, Rich!

WISE Guys (and Gals) At Work

The WISE (Wide-Field Infrared Explorer) mission team has put together these 4 images to celebrate the one year anniversary of the WISE launch. Upper left is NGC 300, a much studied spiral galaxy. Upper right is M104 aka the Sombrero Galaxy, another spiral but seen nearly edge-on. Lower left is M60, an elliptical galaxy 20% larger than the Milky Way. The lower right is M51 or the Whirlpool galaxy, a “grand design” spiral galaxy. To make these images from infrared data, Wavelengths of 3.4 microns were colored blue, 4.6 microns became cyan, 12 microns to green, and 22 microns to red. More information at <http://photojournal.jpl.nasa.gov/catalog/PIA13450> Image Credit: NASA/JPL-Caltech/UCLA





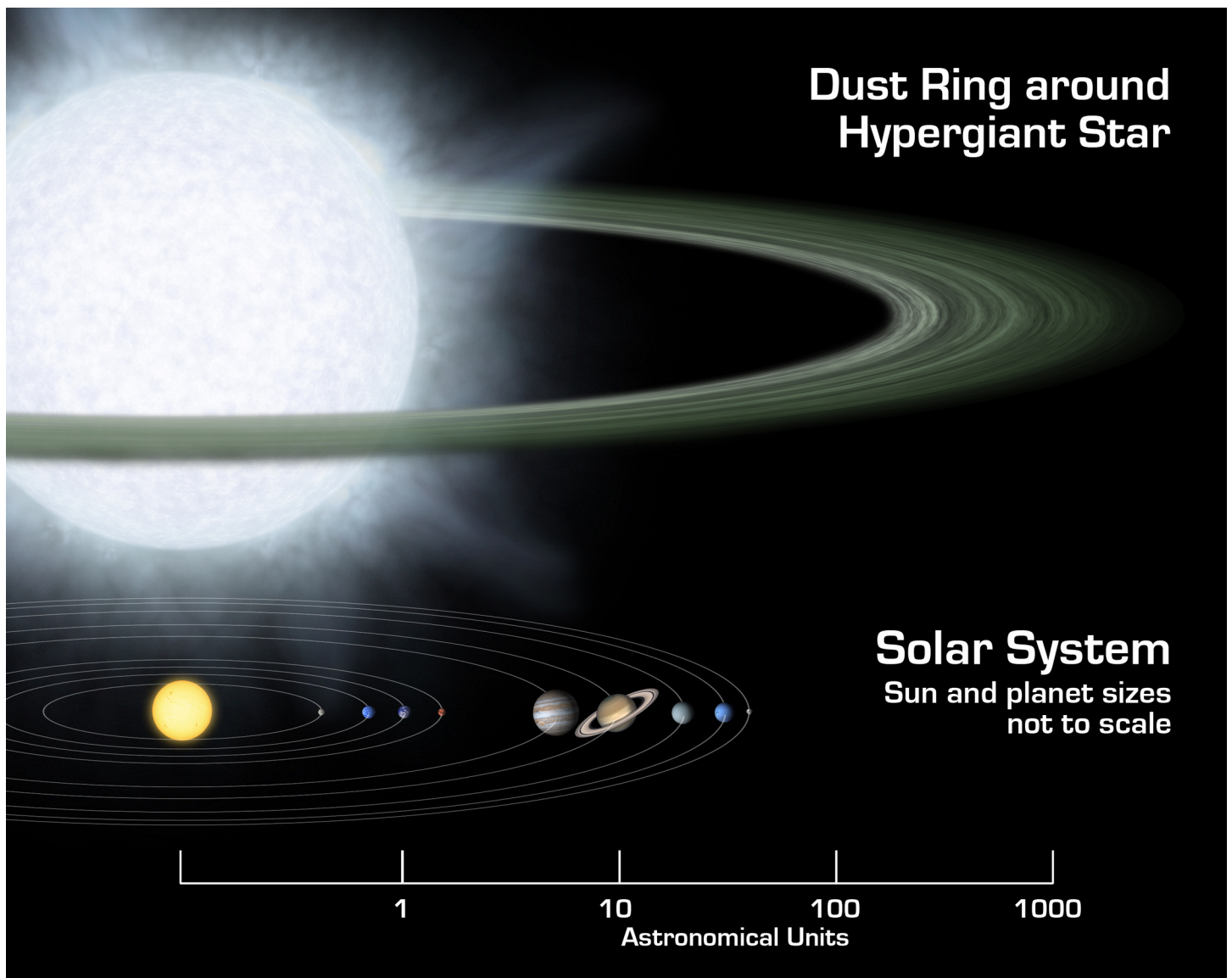
Planets in Strange Places

Trudy E. Bell

Red star, blue star, big star, small star—planets may form around virtually any type or size of star throughout the universe, not just around mid-sized middle-aged yellow stars like the Sun. That's the surprising implication of two

discoveries in 2006 from the 0.85-meter-diameter Spitzer Space Telescope, which is exploring the universe from orbit at infrared (heat) wavelengths blocked by the Earth's atmosphere.

At one extreme are two blazing, blue "hypergiant" stars 180,000 light-years away in the Large Magellanic Cloud, one of the two companion galaxies to our Milky Way. The stars, called R 66 and R 126, are respectively 30 and 70 times the



mass of the Sun, "about as massive as stars can get," said Joel Kastner, professor of imaging science at the Rochester Institute of Technology in New York. R 126 is so luminous that if it were placed 10 parsecs (32.6 light-years) away—a distance at which the Sun would be one of the dimmest stars visible in the sky—the hypergiant would be as bright as the full moon, "definitely a daytime object," Kastner remarked.

Such hot stars have fierce solar winds, so Kastner and his team are mystified why any dust in the neighborhood hasn't long since been blown away. But there it is: an unmistakable spectral signature that both hypergiants are surrounded by mammoth disks of what might be planet-forming dust and even sand.

At the other extreme is a tiny brown dwarf star called Cha 110913-773444, relatively nearby (500 light-years) in the Milky Way. One of the smallest brown dwarfs known, it has less than 1 percent the mass of the Sun. It's not even massive enough to kindle thermonuclear reactions for fusing hydrogen into helium. Yet this miniature "failed star," as brown dwarfs are often called, is also surrounded by a flat disk of dust that may eventually clump into planets. (This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State University.)

Although actual planets have not been detected (in part because of the stars' great distances), the spectra of the hypergiants show that their dust is composed of forsterite, olivine, aromatic hydrocarbons, and other geological substances found on Earth.

These newfound disks represent "extremes of the environments in which planets might form," Kastner said. "Not what you'd expect if you think our solar system is the rule."

Hypergiants and dwarfs? The Milky Way could be crowded with worlds circling every kind of star imaginable—very strange, indeed.

Keep up with the latest findings from the Spitzer at <http://www.spitzer.caltech.edu>. Kids and their grown up friends can enjoy beautiful images from Spitzer while playing Spitzer Concentration at The Space Place (<http://spaceplace.nasa.gov/en/kids/spitzer/concentration>).

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

Telescopes for a Curious Planet

Mark Wagner

I am very pleased to announce, the San Jose Astronomical Association (SJAA) Board of Directors last night approved a new program that donates astronomical equipment, annually or more frequently, to deserving groups or individuals around the world for educational purposes. Equipment may come from donations made to SJAA, or the club's loaner telescope program.

Mr. Kedar Badu in Kathmandu Nepal, with the Galileo Astronomy Club, is first recipient — a 6" home built Dobsonian donated to SJAA by Mr. Nilesh Shah. Mr. Badu authors astronomy articles for publication in Nepal, and does educational outreach taking telescopes to remote villages in his country. Mr. Shah is an SJAA alum, and recently donated his home-built 6" Dobsonian reflector (named Alfani) to the club. Both individuals were pleased to be the first participants in this program. Congratulations Kedar, and thank you Nilesh!



Election Notice

The February meeting is when the members of the SJAA vote for the club's board of directors. This year those up for election are:

Rich Neuschaefer,
Mark Wagner,
Rod Norden,
Lee Hoglan,
Gordon Reade.

All of the incumbents are running for reelection. At the March meeting, the board members elect the club officers.

Shuttle Update

As of Jan. 18, the next Space Shuttle mission is scheduled for Feb. 24. That will be the final flight for Discovery. The following mission, Endeavor on STS-134, is targeted for April 19. Commander of the flight is Mark Kelly whose wife, Congresswoman Gabrielle Giffords, was critically injured in the Tucson shooting. NASA has assigned Rick Struckow as his backup in case he cannot fly. There are rumors that another shuttle flight will be authorized. If not the Space Shuttle program will be over after Endeavor's return..

Directions to Houge Park

Houge (rhymes with "Yogi") Park is in San Jose, near Campbell and Los Gatos. From Hwy. 17, take the Camden Avenue exit. Go east 0.4 miles, and turn right at the light, onto Bascom Avenue. At the next light, turn left onto Woodard Road. At the first stop sign, turn right onto Twilight Drive. Go three blocks, cross Sunrise Drive, then turn left into the park.

From Hwy. 85, take the Bascom Avenue exit. Go north, and turn right at the first traffic light, onto White Oaks Road. At the first stop sign, turn left onto Twilight Drive. You will now be passing the park. Turn right at the first driveway, into the parking lot.

The Last Month In Astronomy

- JAN-12-2011 **SDSS III** The Sloan Digital Sky Survey has released an enormous picture. How enormous? How about 1.2 trillion (that's with a "t") pixels. As soon as you can assemble 500,000 HDTVs into a matrix, you can view it. In the meantime it is better to think of this as a database. Instead of queries you zoom around it. <http://sdss3.files.wordpress.com/2011/01/aas-print-release.pdf>
- JAN-12-2011 **Kepler 10b** The Kepler spacecraft has discovered a rocky planet that is close to Earth-size. It is about 40% bigger than Earth but it is much too close to its star to be a likely holder of life. Its orbit is less than a day. Kepler 10 is a star that is very well studied, perhaps the best known of all the stars that have exoplanets. <http://www.scientificcomputing.com/news-DS-Kepler-Discovers-Its-First-Rocky-Planet-011311.aspx>
- JAN-12-2011 **M1 Dimming** The Crab Nebula (M1) is apparently dimming. The gamma rays (around .001 nanometers) from the nebula have diminished by about 7%. That's a surprise because the nebula has long been thought to be a standard candle. The measurements were made by ESA International Gamma-Ray Astrophysics Laboratory (INTEGRAL), NASA's Swift Burst Alert Telescope and Rossi X-Ray Timing Explorer (RXTE) and NASA's Fermi Gamma-Ray Burst Monitor (GBM). The Crab Nebula is the remnant of a supernova that was seen on Earth in 1054. It has a pulsar (spinning neutron star) at its core but the dimming is due to the nebula. <http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=48124>
- JAN-06-2011 **AGNs not created by collisions** Active Galactic Nuclei (AGN) are powered by blackholes that are busy chowing down in the middle of distant galaxies. But what created the blackhole? It was thought the galactic collisions created the conditions necessary to create the blackholes but new data suggests that is the more rare case. Something else must be causing most of these AGNs such as local instabilities in the galaxy, large molecular clouds, or tidal disruption caused by near misses between galaxies. <http://www.astronomynow.com/news/n1101/06AGN/>
- JAN-05-2011 **10 yr. old finds SN** A girl age 10 has become the youngest person in the world to discover a supernova. Images taken at an amateur observatory were used and compared to previous images find the 17 magnitude star "blinking". Her father, an amateur astronomer, helped by ruling out asteroids and current supernovas. The supernova occurred in galaxy UGC 3378 in the constellation Camelopardalis. <http://www.bbc.co.uk/news/science-environment-12120575>
- JAN-04-2011 **Organics on Mars** Christopher McKay (NASA Ames) says "It's like a 30 year-old cold case suddenly solved with new facts." One new fact was that the Phoenix Martian Laboratory found perchlorate in the soil. The second new fact is that scientists repeated an experiment done by the Viking Martian lander back in 1976. They did this by taking soil from the Atacama Desert (Chile) and adding perchlorate before doing the test. They got the same result that Viking did but the scientists didn't dismiss the results as Earth-based contaminants like they did 34 years ago. <http://news.discovery.com/space/viking-mars-organics-experiment.html>
- DEC-15-2010 **Milky Way Not So Average** We understand a lot about our galaxy by looking at other galaxies. But recent findings show that either our galaxy has some unique attributes or all galaxies are stranger than we thought. The two Magellanic Clouds are more recent additions than we thought and the three-part system looks to be unique particularly in the luminosity of the clouds and in their proximity. The Large Magellanic Cloud has an intrinsic luminosity that is at the upper limit for irregular galaxies of that type. Also, in a survey of more than 25,000 Milky Way type spirals, only 3.5% have companions like the Magellanic Clouds. http://arxiv.org/PS_cache/arxiv/pdf/1012/1012.3492v1.pdf
- DEC-14-2010 **Venus Miss** The Japanese spacecraft Akatsuki failed to enter into orbit around Venus. The rockets that were to fire for more than 9 minutes stopped after less than 3 minutes. Communication was briefly lost but was later reestablished. Since the fuel was not used up, JAXA will be able to try again - in 6 years. <http://www.nature.com/news/2010/101214/full/468882a.html>
- DEC-10-2010 **Time Before Time** The discovery of the Cosmic Microwave Background put an end to the Steady State theory of the Universe and solidified the Big Bang Theory. The remnants of Steady State became the Quasi-Steady State theory - the idea that Big Bangs happen as part of a cycle. But recent research shoots down the cycle idea because there is no evidence that time itself existed before the Big Bang. <http://www.nature.com/news/2010/101210/full/news.2010.665.html>
- DEC-10-2010 **Peeling for Saturn** An emerging theory may explain how Saturn got its rings. If a large moon was slowly moving closer to Saturn it might drop off material as it did so. The first peelings would be of lighter material such as ice. Later peelings would consist of heavier material. This accounts for some rings that are mostly ice and others composed of darker material. <http://www.nature.com/nature/journal/v468/n7326/full/nature09738.html>

It Must Be Astronomical ...

Loaners

The loaner program offers members a means to try scopes of various sizes and technologies before you buy. For more information please see the loaner program web page: <http://www.sjaa.net/loaners>

Dues Change

Effective January 1, 2011, the SJAA membership dues changed. The regular dues are still \$20 but only for members choosing the electronic version of this newsletter. Those who want to continue with the print version will find that their dues are \$30.

“When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.” – Arthur C. Clarke’s First Law

School Star Parties

Completed Events

	Total Sched.	Good Sky	Partial Success	Cloudy Fail	Cancel at noon
Jul	1	1			
Aug	4	4			
Sep	0				
Oct	7	5	1		1
Nov	13	9	3		1
Dec	8	1	2	0	5
Jan	5	0	1	0	4
Total	38	20	7	0	11

Scheduled Events

	Total	Firm	Workin’		
Jan	3	3	0		
Feb	6	5	1		
Mar	6	4	2		
Total	15	12	3		

As of mid-January

Officers and Board of Directors

- Pres** Rich Neuschaefer
- VP** Greg Claytor
- Sec** Mark Wagner
- Tres** Robert Armstrong
- Dir** Lee Hoglan
- Dir** Gordon Reade
- Dir** Rod Norden
- Dir** Kevin Roberts
- Dir** Rob Jaworski

Ephemeris Staff

- Editors** Paul & Mary Kohlmiller
- Circulation** Gordon Reade
- Printing** Accuprint (408) 287-7200

School Star Party Chairman

Jim Van Nuland (408) 371-1307

SJAA Email Addresses

- Board of Directors sjaa-board@sjaa.net
- Announce announce-sjaa@sjaa.net
- School Star Parties schools@sjaa.net
- Ephemeris ephemeris@sjaa.net

Other e-mail contacts are available at <http://www.sjaa.net.contacts.html>

Members Email Lists:
<http://www.sjaa.net/majordomo.html>

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San Jose Astronomical Association Membership Form

P.O. Box 28243 San Jose, CA 95159-8243

New **Renewal** (Name only if no corrections)

Membership Type:

- Regular — \$20
 Regular with Sky & Telescope — \$53
 Junior (under 18) — \$10
 Junior with Sky & Telescope — \$43

Subscribing to Sky & Telescope magazine through the SJAA saves you \$5 off the regular rate. (S&T will not accept multi-year subscriptions through the club program. Allow 2 months lead time.)

I prefer to get the Ephemeris newsletter in print form (Add \$10 to the dues listed on the left). The newsletter is always available online at <http://ephemeris.sjaa.net>
Questions?

Send e-mail to membership@sjaa.net

Bring this form to any SJAA Meeting or send to the club address (above). Please make checks payable to "SJAA".

You can join or renew online:

<http://www.sjaa.net/SJAAmembership.html>

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