



EPHEMERIS

July 2012

SJAA Activities Calendar

Jim Van Nuland

July

- 1 Solar Program: H-alpha observing at Houge Park. Also, Telescope tune-up time. Sun party hours: 2:00 until 4:00 p.m.
- 7 General Meeting. Board meeting (*) at 6:00; Social Time at 7:30; General Meeting at 8:00. Our speaker is Bob Jardine, speaking on Astronomical League observing programs.
- 13 Astronomy Class at Houge Park. 9:15 p.m. The topic: Summer Constellations / Highlight Objects. (outdoor)
- 13 Houge Park star party. Sunset 8:29 p.m, 22% moon rises 2:17 a.m. Star party hours: 9:30 until midnight.
- 14 Dark-Sky weekend. Sunset 8:28 p.m, 15% moon rises 3:01 a.m.
- 21 Dark-Sky weekend. Sunset 8:24 p.m, 10% moon sets 9:44 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 27 Houge Park star party. Sunset 8:19 p.m, 70% moon sets 1:34 a.m. Star party hours: 9:15 until midnight.

August

- 4 General Meeting. Board meeting (*) at 6:00; Social Time at 7:30; General Meeting at 8:00. Our speaker is Tim DeBenedictis, Founder/Owner of Southern Stars software, maker of the Sky Safari app and SkyFi WiFi controller. His topic: Planetarium software: "Astronomy on the iPhone".
- 5 Observing H-alpha flares and sunspots at Houge Park. Also our Telescope Tune-up Time. Sun party and tune-up hours: 2:00 until 4:00 p.m.
- 10 Astronomy Class at Houge Park. 8:00 p.m. The topic: Star charts and planetarium programs.
- 10 Houge Park star party. Sunset 8:05 p.m, 37% moon rises 12:56 a.m. Star party hours: 9:00 until midnight.
- 11 Dark-Sky weekend. Sunset 8:04 p.m, 28% moon rises 1:42 a.m.
- 18 Dark-Sky weekend. Sunset 7:55 p.m, 3% moon sets 8:18 p.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 24 Houge Park star party. Sunset 7:47 p.m, 57% moon sets 12:25 a.m. Star party hours: 8:45 until 11:45 p.m.

The Shallow Sky

Living in the Past

Akkana Peck

What a great couple of months this has been for shallow sky observers! An annular eclipse, closely followed by a Venus transit — and we got to see both of them, and the weather even cooperated.

I hope all of you had as much fun as I had watching the two events. I went to Red Bluff to be in the annular eclipse path — I'd never seen an eclipse bigger than about 65% before. Dave and I had intended to join a public event at Whiskeytown Lake, but the place was a zoo with no chance of parking anywhere nearby, so we ended up doing some sidewalk astronomy back at our motel parking lot. I'm glad, really — we got to share the eclipse with people who would never have seen it otherwise, and it sure was convenient to be right next to the motel room.

We had fun trying to identify features on the moon's limb silhouetted against the sun — I think maybe we were seeing that Big Weird Mountain near Mare Orientale (or one of its neighbors), but I never did figure it out for sure. Identifying features on the moon's limb is always tricky since maps don't show features like that — and if they did,

Continued on page 2

24 hour news and information hotline:
(408) 559-1221
<http://www.sjaa.net>

they'd have to show them at all different librations.

I experimented with different ways of observing the eclipse. I remembered an eclipse when I was a kid where I could see crescent shapes by lacing my fingers together to make a quickie pinhole viewer, or by looking at the shadow cast by the leaves of a tree. Well, the pinhole viewer I made out of a manila folder worked fine to show the sun's shape — holes about the size of a hole punch worked better than bigger or smaller ones. But that laced-fingers or tree-shadow trick? Those didn't really show anything until the eclipse was very advanced and the sun had shrunk to a slim crescent. Then suddenly crescent bright spots were everywhere in the shadows. But it would be an unrewarding way to follow the early stages of an eclipse.

I also tried binocular projection. That worked great, though I was using my cheap Big 5 binocular that lacks threads for a tripod mount, and it was fiddly to hold them steady enough to see detail like sunspots. Still, it was very easy to see the shape of the sun even from the beginning stages — a nice cheap solution for folks who don't have telescopes and can't locate solar filters in time.

For the Venus transit, I stayed closer to home and used better optics, a Takahashi FS102 with Orion glass solar filter. My primary goal was to see the aureole, the arc of Venus' atmosphere outside the sun's disk as Venus began its transit, between first and second contact. It's also been called the "ring of fire" (though that term does double duty since it applies just as well to the annular eclipse). And indeed I did see the aureole, starting when Venus' disk was about 2/3 of the way inside the sun's and lasting until second contact.

There's been some interesting discussion on the aureole since then on the Shallow Sky mailing list. People saw it in all

sorts of filters — Orion, Baader and H-alpha — though the filters that block blue light and show the sun in a deeper orange color may make the effect harder to see. I know I couldn't see it through a couple of older, orange cast Identiview filters while I could in the newer, whiter Orion filter, but that could have been telescope size or quality rather than filter color. People saw the effect in apertures as small as 90mm (with a Baader filter) or 40mm (a Coronado PST in H-alpha). Of course, seeing may have been a factor — it was quite windy here in San Jose on transit day.

Nobody I know seems to have caught the aureole in a photo, though I'm sure lots of them will be appearing on the web soon.

Some people reported a bright halo around Venus as it transited the sun, or a 3-D effect on Venus. I didn't see either of those myself.

Since I'd advised people without telescopes to try binocular projection for the Venus transit, of course I had to try that and make sure I hadn't given bum advice. It was a lot tougher than binocular projection for the eclipse: I couldn't hand-hold the binocular steady enough, and I couldn't see any detail when projecting onto concrete pavement. But when I used an old whiteboard as a projection surface and held the binocular steady on a tripod (I never did get around to rigging up a proper tripod mount), I got a lovely view of Venus in transit, and even some sunspots.

So: lots of ways to see the transit! And it sure did last a long time.

We took a break for a leisurely dinner and still had plenty of time to drive up to Skyline Blvd to find a place to take sunset-with-Venus photos. I loved the sunset views, as the sun squashed orange and red through bands of clouds, looking like a huge Jupiter — complete with a Ganymede shadow transit.

What about this month, July? Well, I guess now I'm living in the past — we

don't have anything in July that comes close to matching the excitement of May and June. But of course the planets and moon are always pretty!

Mercury is visible shortly after sunset for the first half of the month.

Mars and Saturn follow it, Mars setting just before midnight while Saturn lasts about an hour longer. Neither one gets very high.

Uranus and Neptune rise later, about 11 and 10:30 pm respectively, and are available for late-night viewing. Pluto is visible all night, transiting just past midnight, though it's low in the sky, only 33 degrees, and still mired in that complicated Milky Way field near M22 and M24. Jupiter and Venus are morning objects this month.

So there's stuff to look at, and of course, the moon and the sun with all those great sunspots will still be there to look at. So even if there are no more world-shattering events, there should be views to keep you and your telescope busy for a while.

Loaners

The telescope loaner program has been revamped. The program now includes QuickSTART, program geared to those new to astronomy. Please check it out at <http://www.sjaa.net/loaners.shtml>.

Golden State Star Party

GSSP is July 18-22. For more info: <http://www.goldenstatestarparty.org>

The Last Month In Astronomy

JUN-13-2012 **Nu-STAR is the new star** NASA successfully launched Nu_STAR, an X-Ray telescope. Images from this telescope are expected to be "10 times crisper and a 100 times more sensitive" according to Fiona Harrison, the Nu-STAR PI from Caltech. The rocket was launched using the Pegasus XL booster - a rocket that is launched from an L-1011 jet at a height of nearly 8 miles. <http://www.spaceflightnow.com/pegasus/nustar/>

JUN-07-2012 **NASA stops GEMS** The Gravity and Extreme Magnetism project has effectively been cancelled. The \$119 million project failed a review that found that it could be not done within that budget. <http://www.spaceflightnow.com/news/n1206/07gems/>

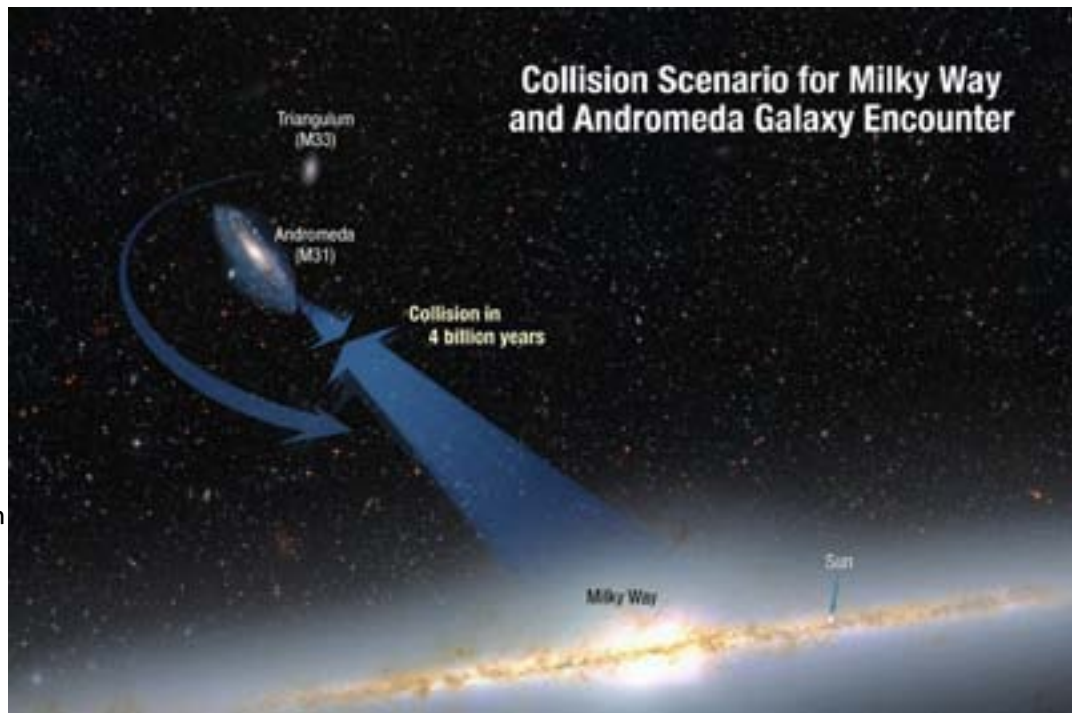
JUN-05-2012 **Venus Transit** Even without magnification and using solar eclipse viewing glasses you could still make out the small shadow as Venus transited the sun. With solar binoculars you could see a number of sunspots as Venus slowly moved "down" the sun. Others using solar telescopes were treated to wonderful images of the sun complete with Venus in the view - a view that won't be seen again for 105.5 years. Photos from the SJAA's support of the Venus transit are courtesy of Mark Wagner. Below left is Val Dunne - Vice President of the Irish Astronomical Society, who was here to observe the TOV with us! He is shown here presenting a book on ancient Irish astronomy to SJAA club president Mark Wagner. Below right a couple of youngsters view the transit using the club's new solar telescope. At bottom is a projection box set up by Jim Van Nuland. On the next page is a view of the crowd and also a photo showing a "solar funnel" set up by Pete Santangeli.





MAY-31-2012 **M31 Heading Our Way** For a long time, astronomers have known that the Andromeda Galaxy is getting closer to us. The galaxy known as M31 is heading in our direction at a speed of about 250,000 miles per hour. Recently

astronomers have announced that they know Andromeda is heading directly toward us, it won't sweep by along side of us. The collision will occur in 4 billion years if you want to update your day planner. Interestingly, another galaxy called M33 (The Triangulum galaxy) may actually collide with the Milky Way galaxy first. Regardless, the Earth is almost certainly going to be unaffected because the space between stars is so large. The galaxies will dance around each other until they form a single elliptical galaxy which will take another 2 billion years. http://www.nasa.gov/mission_pages/hubble/science/milky-way-collide.html



MAY-24-2012 **Organic but not biological C** Scientists have found evidence that organic chemistry occurs on Mars but that doesn't imply biological processes. Instead, the carbon probably is the result of volcanism. You might recall the hub-bub caused by the Martian meteorite called Allan Hills 84001 because it suggested the possibility of biology. But a new paper shows that chemical reactions involving graphite could have been involved. <http://www.astronomy.com/News-Observing/News/2012/05/Organic%20carbon%20from%20Mars%20but%20not%20biological.aspx>

MAY-20-2012 **Annular Eclipse** Two weeks before this eclipse we had the so-called supermoon, the result of a full moon occurring very near the moon's perigee. So it stands to reason that the moon's apogee would occur during a new moon, and solar eclipses happen during a new moon (not always of course). An eclipse at lunar apogee means that the moon's visage is smaller than the sun's, thus a ring (or annulus) is seen. In San Jose, the eclipse was partial. Folks traveling to Redding or near that area got the full ring effect. In the photo on the right, Mary Kohlmeier is looking at the advanced stage of the eclipse using eclipse viewing glasses while the shadow from a tree creates crescent shaped shadows on the wall behind her. Photo by Paul Kohlmeier. The photo below shows part of the crowd viewing the eclipse through a myriad of technologies. Photo courtesy of Hsin I. Huang



MAY-17-2012 **Herschel finds filament** The Herschel space observatory has discovered a filament containing hundreds of galaxies and billions of stars. According to Kristen Coppin (McGill University) "We are excited about this filament because we think the intense star formation we see in its galaxies is related to the consolidation of the surrounding supercluster." The filament spans 8 million light-years and the light Herschel sees has been traveling for 7 billion years. <http://www.jpl.nasa.gov/news/news.cfm?release=2012-139>

MAY-16-2012 **NASA's Loaner Program** We don't know if NASA was inspired by the SJAA's telescope loaner program but they are loaning the space observatory called GALEX (Galaxy Evolution Explorer) to Caltech. The unprecedented agreement allows the university to take over spacecraft operation using private funds. <http://www.jpl.nasa.gov/news/news.cfm?release=2012-137&rn=news.xml&rst=3369>



How Many Discoveries Can You Make in a Month?

Dr. Tony Phillips

This year NASA has announced the discovery of 11 planetary systems hosting 26 planets; a gigantic cluster of galaxies known as "El Gordo;" a star exploding 9 billion light years away; alien matter stealing into the solar system; massive bullets of plasma racing out of the galactic center; and hundreds of unknown objects emitting high-energy photons at the edge of the electromagnetic spectrum.

That was just January.

Within NASA's Science Mission Directorate, the Astrophysics Division produces such a list nearly every month. Indeed, at this very moment, data is pouring in from dozens of spacecraft and orbiting observatories.

"The Hubble, Spitzer, Chandra, and Fermi space telescopes continue to make groundbreaking discoveries on an almost daily basis," says NASA Administrator Charlie Bolden.

NASA astrophysicists and their colleagues conduct an ambitious research program stretching from the edge of the solar system to the edge of the observable Universe. Their work is guided in large part by the National Research Council's Decadal Survey of Astronomy and Astrophysics, which identified the following priorities:

Finding new planets—and possibly new life—around other stars.

Discovering the nature of dark energy and dark matter.

Understanding how stars and galaxies have evolved since the Big Bang.

Studying exotic physics in extreme places like black holes.

Observing time on Hubble and the other "Great Observatories" is allocated accordingly.

Smaller missions are important, too: The Kepler spacecraft, which is only "medium-sized" by NASA standards, has single-handedly identified more than 2300 planet candidates. Recent

finds include planets with double suns, massive "super-Earths" and "hot Jupiters," and a miniature solar system. It seems to be only a matter of time before Kepler locates an Earth-sized world in the Goldilocks zone of its parent star, just right for life.

A future astrophysics mission, the James Webb Space Telescope, will be able to study the atmospheres of many of the worlds Kepler is discovering now. The telescope's spectrometers can reveal the

Continued on page 7



Artist's concepts such as this one are based on infrared spectrometer data from NASA's Spitzer Space Telescope. This rendering depicts a quadruple-star system called HD 98800. The system is approximately 10 million years old and is located 150 light-years away in the constellation Crater. Credit: NASA/JPL-Caltech/T. Pyle (SSC)

It Must Be Astronomical ...

NASA Space Place
Continued from page 6

chemistry of distant exoplanets, offering clues to their climate, cloud cover, and possibilities for life.

That's not the telescope's prime mission, though. With a primary mirror almost 3 times as wide as Hubble's, and a special sensitivity to penetrating infrared radiation, Webb is designed to look into the most distant recesses of the universe to see how the first stars and galaxies formed after the Big Bang. It is, in short, a Genesis Machine.

Says Bolden, "We're on track in the construction of the James Webb Space Telescope, the most sophisticated science telescope ever constructed to help us reveal the mysteries of the cosmos in ways never before possible." Liftoff is currently scheduled for 2018.

How long will the list of discoveries be in January of that year? Stay tuned for Astrophysics.

For more on NASA's astrophysics missions, check out <http://science.nasa.gov/astrophysics/>. Kids can get some of their mind-boggling astrophysics questions answered by resident Space Place astrophysicist "Dr. Marc" at <http://spaceplace.nasa.gov/dr-marc-space>.

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

School Star Parties

Completed Events					
	Total Sched.	Good Sky	Partial Success	Cloudy Fail	Cancel at noon
Jul	0				
Aug	1	1			
Sep	1	1			
Oct	6	3			3
Nov	13	9		1	3
Dec	4	4			
Jan	4	0	1		3
Feb	10	6		1	3
Mar	10	1	3		6
Apr	5	3	1		1
Total	54	28	5	2	19
Scheduled					
May	1				
Jun	1				
Jul/Aug	2				
Total	4				

As of May 1, 2012

School Star Party Link

For information on school star parties including how to schedule one see <http://www.sjaa.net/school.shtml>.

Officers and Board of Directors

Pres Mark Wagner
VP Greg Claytor
Sec Rob Jaworski
Tres Robert Armstrong
Dir Lee Hoglan
Dir Rich Neuschaefer
Dir Rod Norden
Dir Kevin Roberts
Dir Michael Packer

Ephemeris Staff

Editors Paul & Mary Kohlmler
Circulation Mina Reyes-Wagner
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
 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>

<http://sanjoseastronomy.blogspot.com/>
 twitter: [sj_astronomy](https://twitter.com/sj_astronomy)
<http://www.meetup.com/A-A-N-C/>

Publication Statement

SJAA Ephemeris, newsletter of the San Jose Astronomical Association, is published monthly.

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

The SJAA Ephemeris is published in three formats: hardcopy, Adobe Acrobat PDF, and HTML. The PDF and HTML versions are found at <http://ephemeris.sjaa.net>.

Articles for publication should be submitted by the 10th of the previous month. The PDF version is generally available by the 24th of the previous month and the HTML version by the last day of the previous month.

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

ADDRESS SERVICE REQUESTED

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/membership.shtml>

Name: _____

Address: _____

City/ST/Zip: _____

Phone: _____

E-mail address: _____