



EPHEMERIS

February 2013

SJAA Activities Calendar

Jim Van Nuland

February

- 1 Beginner Astronomy Class at Houge Park. 7:00 p.m.
- 1 Houge Park star party. Sunset 5:33 p.m, 66% moon rises 11:36 p.m. Star party hours: 7:00 until 10:00 p.m.
- 2 Dark-Sky weekend. Sunset 5:34 p.m, 52% moon rises 12:42 a.m.
- 3 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.
- 9 Dark-Sky weekend. Sunset 5:41 p.m, No moon. Henry Coe Park's "Astronomy" lot has been reserved.
- 15 Houge Park star party. Sunset 5:48 p.m, 34% moon sets 11:45 p.m. Star party hours: 7:00 until 10:00 p.m.
- 23 **General Meeting.** Board meeting at 6:00; Social Time at 7:30; General Meeting at 8:00. Our speaker is Dr. Thomas Zobrist, LLNL; his topic: The Future of Ground-based Astronomy.

Board Elections February 23
Annual Meeting

March

- 1 Houge Park star party. Sunset 6:02 p.m, 79% moon rises 10:34 p.m. Star party hours: 7:00 until 10:00 p.m.
- 2 Dark-Sky weekend. Sunset 6:03 p.m, 68% moon rises 11:40 p.m.
- 3 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.
- 9 Dark-Sky weekend. Sunset 6:10 p.m, 2% moon rises 5:28 a.m. Henry Coe Park's "Astronomy" lot has been reserved.
- 10 DST begins. At 2 a.m. advance clocks to 3 a.m.
- 15 Beginner Astronomy Class at Houge Park 7:15 p.m.
- 15 Houge Park star party. Sunset 7:15 p.m, 19% moon sets 11:38 p.m. Star party hours: 8:15 until 11:15 p.m.
- 16 First quarter Moon outdoor meeting at Houge Park: Advanced topics. Meeting hours: 7:30 until 9:00 p.m.
- 24 Auction XXXIII - Noon to late afternoon at Houge Park.
- 24 Observing H-alpha flares and sunspots at Houge Park. Sun party hours: 2:00 until 4:00 p.m.

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

Exoplanet Scoreboard

as of mid-January 2013

The numbers in parentheses are from a year ago, the last time we printed this scoreboard.

Current number of exoplanet candidates from all sources: unknown but probably more than 3000.

Number of exoplanet candidates found by Kepler: 2,740 (2,326)

Planets Detected - all sources: 859 (708)

Confirmed planets detected by Kepler: 105 (28)

Smallest planet around a sunlike star: Tau Ceti e — 5 earth masses.

Closest planet: Alpha Centauri B b. — 4 light years away.

Super Earths Detected: several

Extraterrestrial Life Confirmed: 0

Intelligent Life: 0 (not counting Earth and, then again, why would we?)

Number of observations analyzed by citizen scientists at <http://www.planethunters.org>: 16,575,683. Number of planetary candidates found: 34

A look back at 2012 for the SJAA

Rob Jaworski

We're at the start of another cycle around the sun, and this is a good point in time (and space) to look back over the past cycle to see what's been going on with the San Jose Astronomical Association.

The Quick START program (the former Mentoring Program) helps to ease folks into amateur astronomy. You have to admit, astronomy can look exciting from the outside, but once you scratch the surface, it can get seemingly complex in a hurry. But it doesn't have to be that way if there's someone to guide you and answer all your seemingly basic questions. The Quick START program really took off in 2012 with the leadership and energy of Dave Ittner. He has already helped dozens and dozens of people get their feet wet in getting out under dark skies to discover what's out there, firsthand. Over the year, Dave has also refined the program, adding not only easy to use Dobsonian telescopes but all the accessories any good observer needs, such as observing chairs, appropriate eyepieces, sky atlases, accessory cases, etc. The Quick START program is available to SJAA members, and you can find more information, including how to contact Dave to sign up, [here](#).

Another program that was conceived just before 2012 but has really taken off is the Solar Observing program. Early in 2012 the club took receipt of a Lunt h-alpha 100mm solar telescope. Since then, it's been the star (!) of the party at every daytime event. The core of the Solar Observing program is the monthly observing sessions at San Jose's Houge Park. On the first Sunday of every month, from 2 to 4PM PT, SJAA members set up the club's Lunt for the public to come view our nearest star. Additionally, members bring their own solar telescopes, such as Coronado PSTs to projection systems, with which to compare views. Of course, sometimes the weather doesn't cooperate and

the session is canceled, but in those oftentimes when we do set up, the sun provides an amazing show. In fact, the sun is approaching the solar maximum, which means lots to see on and near the sun. Michael Packer runs the Solar Observing program and has proven a dedicated sun watcher! (Remember: NEVER observe the sun without proper eye protection! You can go blind!)

A program that is entirely new for 2012 was the Fix It session, sometimes called the Tune Up or the Telescope Fix It program. This is a real simple service the SJAA offers to members of the community, though it's priceless. The Fix It session provides a place for people to come with their telescope or other astronomy gear problems. Every first Sunday of the month, from 2 to 4PM (coinciding with the Solar Observing sessions), several SJAA members make themselves available at Houge Park for people to come with their scopes to get help with their gear. It can be any type of issue, such as broken scopes whose owners need advice, help with collimation, or even a quick session on how to use it. Weather doesn't slow this program down, so even if it's windy, cold and rainy outside, Fix It day goes on. Big thanks to go Ed Wong and Phil Chambers for being the gear experts who faithfully make themselves available at Fix It day!

Another new program that debuted in 2012 is the Astro Imaging Special Interest Group (SIG). This was spearheaded by Harsh Kaushikkar and has a mission of bringing together people who have an interest in astronomy imaging, or put more simply, taking pictures of the night sky. The Imaging SIG meets roughly every other month at Houge Park to discuss topics about imaging, as well as in the field, usually at Rancho Cañada del Oro (more on that site later). The SIG is open to people with absolutely no experience but want to learn what it's all about,

but experienced imagers are also more than welcome, indeed, encouraged to participate. The best way to get involved is to review the postings on the SJAA AstroImaging mail list in Google Groups. <https://groups.google.com/forum/?hl=en&fromgroups=#%21forum/sjaa-astroimaging>

The SJAA has been working with the Santa Clara County Open Space Authority (sometimes called simply the OSA) to make one of their sites available to astronomers. The OSA's Rancho Cañada del Oro (sometimes called RCDO, or Rancho) site is made available more and more with the dedicated work of SJAA members Chris Kelly and Dave Ittner. Both are also docents with the OSA, which really makes the partnership between the two organizations that much more cohesive. If you are interested in experiencing a fairly dark site that's not too far from home, consider coming out to Rancho when it's announced it will be open. Located just south of Calero County Park, between San Jose and Morgan Hill, Rancho gets surprisingly dark for being so close to an urban area. Keep an eye out on the SJAA Announce mail list for notifications of when it will be available.

There were many more accomplishments during the year for the SJAA, and this post could go on and on about them. But before we get too long winded, let me make a few, more brief acknowledgments.

- Teruo Itsumi developed and hosted the first Messier Half Marathon at Henry Coe State Park in October
- SJAA members gathered to view the Venus Transit, the annular eclipse, and the last shuttle flyby.
- The SJAA again participated in two community events, the Cambrian Festival and the Almaden Art and Wine Festival.

Planets in February

- The City of San Jose provided a grant of \$500 to the SJAA to help offset the cost of insurance for the school star party program.
- Jim Van Nuland continues to be the heart and soul of the school star party program.
- The telescope loaner program was revamped, with its inventory cleaned up. And the auction was a success, in which the club divested itself of many older scopes from the loaner program bringing in some much needed funds to help with the revamp of the loaner program.
- The general meetings now have a social time beforehand, allowing members to mingle.
- The SJAA produced a video of one of the monthly talks, which was broadcast on cable TV.
- The website was overhauled, and looking great.
- The club newsletter continues to be consistently produced every month, in large part due to Paul Kohlmeier's effort, and the monthly column by Akkana Peck.
- And membership has increased by 10%!

There is more, indeed, but these many items are the highlights. The board and the active volunteers have plans to make 2013 just as active, lively and fun. I hope that if you haven't been getting involved, you will consider doing it soon! Come to Houge Park, or contact any of the board members to participate!

Happy New Orbit!



Asteroid 2012 DA14 - this asteroid will pass closer to Earth than that geostationary satellite that you get your television broadcasts from. It probably will not cause an outage on February 15 but have a book handy just in case.

Mercury - Visible during the middle of the month particularly in the evening of February 16th. In a telescope it should appear to be as a half disk.

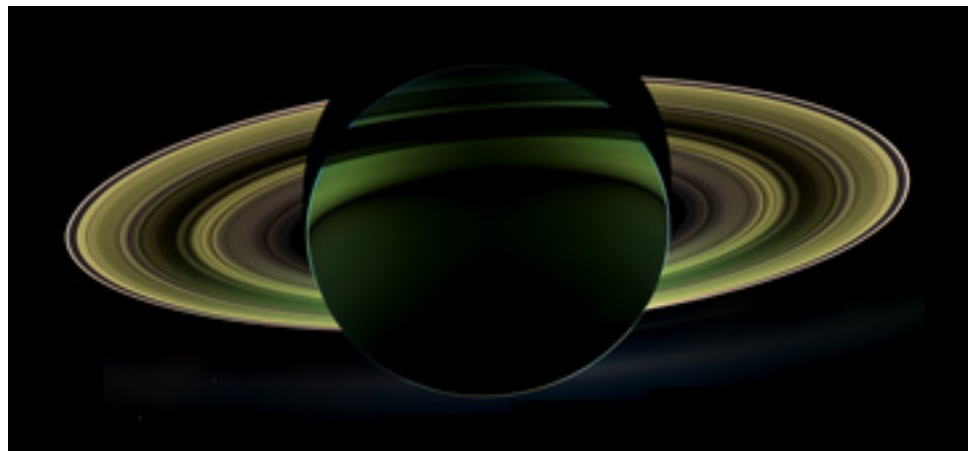
Venus - A morning star this month but it is low in the sky and getting lower. Conjunction is on March 28th.

Moon - Checkout the moon as it passes close to Spica on February 28th. If you are in Mexico or further south you can catch an occultation.

Mars - Close to Mercury but not as bright. They appear closest to each other on February 8th.

Jupiter - The solar system's largest planet continues to dominate the night skies. It is brighter than any star including Sirius. Because of the sun's angle this is a great month to view the Galilean moons transits.

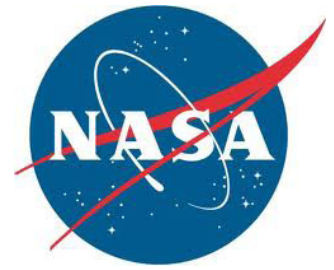
Saturn - The picture below was taken by the Cassini spacecraft when it was behind Saturn and pointed toward the sun. (Image credit: NASA/JPL-Caltech/Space Science Institute) The backlit rings are spectacular. Saturn rises around midnight. It will be low in the southern sky. It is a good month to view the planet's shadow on its rings.



Uranus - A difficult object in the western sky just after sunset.

Neptune - Close to Mercury but very difficult to see early in the month then it gets worse. Neptune reaches conjunction on the 21st.

Comets - You might already know about Comet ISON (C/2012 S1) which may be a naked-eye object by December. But Comet PanSTARRS (C/2011 L4) will be a magnitude 4 object (maybe, comet magnitude predictions for objects making their first inner solar system visit are notoriously bad) by late February. However, it will probably be too far south to be seen around here until mid-March.



The Art of Space Imagery

Diane K. Fisher

When you see spectacular space images taken in infrared light by the Spitzer Space Telescope and other non-visible-light telescopes, you may wonder where those beautiful colors came from? After all, if the telescopes were recording infrared or ultraviolet light, we wouldn't see anything at all. So are the images "colorized" or "false colored"?

No, not really. The colors are translated. Just as a foreign language can be translated into our native language, an image made with light that falls outside the range of our seeing can be "translated" into colors we can see. Scientists process these images so they can not only see them, but they can

also tease out all sorts of information the light can reveal. For example, wisely done color translation can reveal relative temperatures of stars, dust, and gas in the images, and show fine structural details of galaxies and nebulae.

Spitzer's Infrared Array Camera (IRAC), for example, is a four-channel camera, meaning that it has four different detector arrays, each measuring light at one particular wavelength. Each image from each detector array resembles a grayscale image, because the entire detector array is responding to only one wavelength of light. However, the relative brightness will vary across the array.

So, starting with one detector array, the first step is to determine what is the brightest thing and the darkest thing in the image. Software is used to pick out this dynamic range and to re-compute the value of each pixel. This process produces a grey-scale image. At the end of this process, for Spitzer, we will have four grayscale images, one for each for the four IRAC detectors.

Matter of different temperatures emit different wavelengths of light. A cool object emits longer wavelengths (lower energies) of light than a warmer object. So, for each scene, we will see four grayscale images, each of them different.

Normally, the three primary colors are assigned to these gray-scale images based on the order they appear in the spectrum, with blue assigned to the shortest wavelength, and red to the longest. In the case of Spitzer, with four wavelengths to represent, a secondary color is chosen, such as yellow. So images that combine all four of the IRAC's infrared detectors are remapped into red, yellow, green, and blue wavelengths in the visible part of the spectrum.

Download a new Spitzer poster of the center of the Milky Way. On the back is a more complete and colorfully-illustrated explanation of the "art of space imagery." Go to spaceplace.nasa.gov/posters/#milky-way.



This image of M101 combines images from four different telescopes, each detecting a different part of the spectrum. Red indicates infrared information from Spitzer's 24-micron detector, and shows the cool dust in the galaxy. Yellow shows the visible starlight from the Hubble telescope. Cyan is ultraviolet light from the Galaxy Evolution Explorer space telescope, which shows the hottest and youngest stars. And magenta is X-ray energy detected by the Chandra X-ray Observatory, indicating incredibly hot activity, like accretion around black holes.

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

So Long, And Thanks For All The Fun!

Mark Wagner

This is my last note to the SJAA as club president, and as a member of the board of directors. And it is not so much a goodbye (I'll be around), as it is allowing a transition to a new and energized board of directors, that I expect to be filled by some of our most active and creative members. You will undoubtedly recognize their names. These are the individuals with whom I choose to entrust the immediate future and long term direction of the SJAA.

First though, acknowledgements are in order.

Thank you to Rod Norden and Kevin Roberts, both of whom have been board of director members for four or five years, but have decided to not run for their seats again, and for a very good reason! Their participation on the board and great support of the club is both noteworthy and commendable. Rod taught our Beginner Astronomy classes outdoors for several years, and will continue to support that program. Kevin is surely well known to anyone that comes to the Friday night star parties at Houge Park, as his knowledge and fun personality provided both education and entertainment to all he encounters. I look forward to seeing him again on Houge Friday nights. Kevin and Rod were and are committed to, passionate about, their hobby and the SJAA. I'm glad they will continue their support of the club, even after their leaving the board.

So, why are we three leaving the board?

We've all served, for about five years (long enough), and there is new blood with new ideas, with great enthusiasm, ready to move the club forward again. Kevin, Rod and I have all had that opportunity, and I'm pleased with all we've accomplished. I know we'll all still be around, and can be counted on as experienced advisers, when needed. I also know we'll enjoy seeing the club "leadership" once again fired up and moving, by the infusion of ideas and energy new enthusiastic board members will bring.

I'll close by recommending Rob Jaworski as the next SJAA president. He has been on the board long enough, knows how things work, and is tireless in his participation with the SJAA. Since there will be three board seats open, if not four, when elections take place at the February Annual Meeting - I would be pleased to see Dave Ittner, Teruo Utsumi, Ed Wong or Harsh Kaushikkar nominated and elected to fill any open seats. They have been as active, if not more active, than many of the current board (hard to keep up with such enthusiasm), and all have my full support.

I think it is important to have new people involved with the SJAA at the board level, so we don't end up with entrenchment, burnout, or lack of acceptance of new ideas or opportunities brought to the SJAA by its members. We need those who want to share their enjoyment of the hobby with others, and board seats are the best way to put the club in those hands - so it can continue to grow. I'm for a growing, expanding club!

I see a great immediate future for the SJAA, and look forward to supporting its continued growth.

I've had a wonderful time serving on the board and as president with the SJAA. Thank you all for allowing me the honor. And once again, my personal thanks, and thanks on behalf of the club, to Kevin and Rod for their great service on the board.... well done!

Here's to a great 2013 for a great club! Come out and support it.



Thank you San Jose City Council and Councilmember Donald Rocha

We hope that everyone recognizes that one of the greatest things the SJAA does is conduct star parties at area schools. Jim Van Nuland does a terrific job at setting up and running these events.

Jim and the other volunteers only get paid in "Oh Wows" that we get from the students, teachers and parents. In fact,

you might think this is something the club can afford to do for free. Not quite.

It is critical that the SJAA have insurance that covers the School Star Party program. This insurance is not as cheap as you would think it should be for a non-profit. That is why a recent \$500 grant from the City of San Jose is so

appreciated. A special thanks goes to District 9 Councilmember Donald Rocha for his efforts in getting this grant for the SJAA.

As Mark Wagner says "The support of the City is a wonderful thing to have, and makes it easier for us to bring astronomy to the City schools."

The Last Month In Astronomy

JAN-13-2013 **Planet Hunters** The Zooniverse project oversees the Planet Hunters project which uses dedicated amateurs to find planets otherwise hidden in Kepler data. The latest announcement is that 42 new planets have been discovered by the Planet Hunters. Some of these planets are in the habitable zone and may include Avatar-like moons, moons around large planets that could harbor life. http://www.msnbc.msn.com/id/50449282/ns/technology_and_science-space/

JAN-09-2013 **Apothisizing** The asteroid Apophis recently passed near Earth. This asteroid was one time thought to have a 2.7% chance of impacting Earth in 2029. Then that was reduced to 0 and the year 2036 seemed possible. Now it looks like 2036 and every other year within a reasonable timeframe has a virtually 0% chance. In addition, the Herschel spacecraft took new observations that sets the size of Apophis to be 325 meters compared to previous estimates of 270 meters. In addition, the albedo of Apophis is .23 which is less than the previous measurement of .33. <http://www.jpl.nasa.gov/news/news.php?release=2013-015>

JAN-09-2013 **Farthest Supernova** Astronomers at Berkeley have set a record for the most distant Type 1a Supernova. Now called SN SCP-0401, the supernova has a redshift of 1.71 which corresponds to a lookback time of 10 billion years. According to David Rubin from Berkeley Lab "The most important unanswered question we have about the nature of dark energy is whether it varies over time ... we have the first example of a well-measured supernova sufficiently far away to study the expansion history of the universe from almost 10 billion years ago." <http://newscenter.lbl.gov/news-releases/2013/01/09/scp0401-farthest-yet/>

JAN-08-2013 **Warm and cold belts** The star Vega appears to have two asteroid belts, one cold and one warm. This makes it similar to two other stars. One of those stars is Fomalhaut. The other is one that you know well, the Sun. The sun's warm asteroid belt is that one we actually call "the" asteroid belt and the cold belt is the Kuiper belt. The cold belt is 10 times further away than the warm belt in all 3 stars. It is likely that all 3 stars have multiple Jovian-class planets between the warm and cold belts but we are only certain about one of them. <http://www.jpl.nasa.gov/news/news.php?release=2013-012>

JAN-07-2013 **Kepler strikes again** The Kepler project has announced the discovery of 461 new planet candidates. These candidates come from observations made between May 2009 and March 2011. The new candidates show that more stars with multiple planets are being found. Also, the number of smaller planet candidates is increasing. 4 of the candidates are less than 2 earth masses and orbit within the expected habitable zone. <http://www.jpl.nasa.gov/news/news.php?release=2013-005>

JAN-04-2013 **Watery Mars Meteorite** A meteorite found in Northwest Africa was formed 2.1 billion years ago on Mars. The meteorite is a better match to rocks studied by Mars rovers than it is to other Martian meteorites. It has a high water content. <http://www.astronomy.com/News-Observing/News/2013/01/Researchers%20identify%20water-rich%20meteorite%20linked%20to%20Mars%20crust.aspx>

DEC-19-2012 **Ultramassive Black Holes** A new survey of 18 galaxy clusters has found at least 10 ultramassive black holes. Black holes in this category have 10 to 40 billion solar masses. Andrew Fabian (Cambridge University) says "These results may mean we don't really understand how the very biggest black holes coexist with their host galaxies." The assumption is that these ultramassive black holes must behave very differently from their smaller counterparts. <http://www.astronomy.com/News-Observing/News/2012/12/From%20super%20to%20ultra%20-%20Just%20how%20big%20can%20black%20holes%20get.aspx>

DEC-17-2012 **GRAIL Impact** The NASA GRAIL (Gravity Recovery and Interior Laboratory) mission was completed when it impacted the moon on December 17th. The impact site was immediately named for Sally K. Ride. The data from GRAIL will take years to analyze. The two spacecraft, named Ebb and Flow, entered lunar orbit on New Years Day of 2012 after a launch in September of 2011. <http://www.jpl.nasa.gov/news/news.php?release=2012-401>

DEC-13-2012 **Distant Microquasar Found** A microquasar is powered by a stellar size black hole devouring material from a companion star. These have only been found in the Milky Way, until now. A microquasar has been found in the Andromeda galaxy. The mechanism at work in these microquasars are thought to be similar to quasars found in active galactic nuclei. However, the processes within the microquasar are more dynamic. Also, finding them in other galaxies is a boon to astronomers because the microquasars in the Milky Way galaxy occur in the galactic disk and are thus obscured by dust, gas and other stars. <http://www.astronomy.com/News-Observing/News/2012/12/From%20super%20to%20ultra%20-%20Just%20how%20big%20can%20black%20holes%20get.aspx>

It Must Be Astronomical ...

Upcoming Elections

The annual elections for the SJAA Board of Directors will take place at the February General meeting. It is not a requirement but those wishing to be nominated are recommended to contact Mark Wagner, head of the nominating committee. (see page 5 of the December issue)

"...we are in this universe, ...When I reflect on that fact, I look up-many people feel small, cause they're small and the universe is big. But I feel big because my atoms came from those stars" - Neil deGrasse Tyson

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>.

School Star Parties

Completed Events					
	Total Sched.	Good Sky	Partial Success	Cloudy Fail	Cancel at noon
Jul	2	2			
Aug	1	1			
Sep	1	0	1		
Oct	7	3			4
Nov	11	4			7
Dec	13	4			
Total	35	14	1		11
Scheduled - for the 2012/2013 school year					
	Total	Firm	Working		
Jan	8	7	1		
Feb	6	5	1		
Mar	4	2	2		
Apr	1	0	1		
May	1	0	1		
Total	20	14	6		

As of December 28, 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 Michael Packer
Dir Lee Hoglan
Dir Rich Neuschaefer
Dir Rod Norden
Dir (Open)
Dir Mina Reyes-Wagner

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@googlegroups.com
 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

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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: _____