

PRIME FOCUS

Tri-Valley Stargazers

December 2009



Meeting Info:

What

TVS Holiday Potluck

Who

You

When

December 18 2009

Set up at 6:30 p.m.

Dinner at 7:00 p.m.

Where

Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

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December Meeting

Holiday Potluck

You

As winter finally comes to TVS land, bringing with it the longest nights for observing, we celebrate by having a holiday potluck.

TVS members are asked to bring a dish to share, be it a side dish, main dish, or dessert. TVS will provide the beverages and paper and plastic ware.

We'll open up the doors at 6:30 to get the table and chairs set up.

We'll commence eating at 7:00. Feel free to bring family and friends—the more the merrier!



Dues Are Due

TVS' membership year runs from January to December, so now is the time to renew your membership. Our membership rates remain unchanged from last year, and the renewal form can be found on the back of this newsletter or on our web site under the Membership link. Please make our Treasurer's New Year especially wonderful by sending in your renewal today.

Newsletter Editor Needed—Last Issue of Prime Focus

This will be the last issue of Prime Focus unless someone steps in to take over producing the newsletter. As announced in the November Prime Focus, the current newsletter editor will no longer be able to continue doing the newsletter. Anyone wishing to take over doing the newsletter will have full reign over the style and content. The newsletter does not have to follow the current format; the primary focus should be on that month's talk, and any club activities.

As of press time, no one has volunteered to take over doing the newsletter, therefore there will be no more future issues of Prime Focus.

If someone would like to take on the challenge of producing the newsletter, please contact Debbie Dyke at astrodeb@comcast.net or 925~461~3003. Debbie will help with the transition.

News & Notes

2009-2010 TVS Meeting Dates

The following lists the TVS meeting dates for December and for all of 2010. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting.

Lecture Meeting	Board Meeting	Prime Focus Deadline
Dec. 18	Dec. 21	Dec. 6
Jan. 15	Jan. 18	?
Feb. 19	Feb. 22	
Mar. 19	Mar. 22	
Apr. 16	Apr. 19	
May 21	May 24	
June 18	June 21	
July 16	July 19	
Aug. 20	Aug. 23	
Sept. 17	Sept. 20	
Oct. 15	Oct. 18	
Nov. 19	Nov. 22	
Dec. 17	Dec. 20	

Money Matters

At the November Board Meeting, Treasurer David Feindel left word of the TVS account balances as of November 20, 2009:

Checking	\$4,103.66	
CD #1	\$3,759.55	rolled over 11/17/09
CD #2	\$2,653.02	will roll over 11/27/09

CD #1 was converted to a 21-month CD at 1.15% APY (we had been getting 0.1% APY for the 3-month CDs).

RASC Handbooks and Calendars Are In

We've received our shipment of the Royal Astronomical Society of Canada's Handbooks and Calendars. We'll have them on sale at the December potluck—Handbooks are \$22 each, Calendars are \$15. If you need to get your Handbook/Calendar before the meeting, please contact Treasurer David Feindel at feindel1@comcast.net.

The Handbook is full of all manner of useful astronomical information. It has a month by month "What's Up" section, a Lunar and Solar eclipse section, tables of bright stars and other objects, basic optics and observing guides, and much, much more.

The Calendar uses amateur astrophotos taken by members of the Society and has historical and observational information listed throughout the year.

If you would like more information about the items, visit the RASC's web site: <http://www.rasc.ca/handbook/> and <http://www.rasc.ca/calendar/>. They make great holiday gifts!

TVS Election Results—More Volunteers Needed

There were no surprise results in our November election. The slate of officers for 2009-2010 is as follows:

President - Chuck Grant

Treasurer - David Feindel

Board of Directors - Jim Alves, Gert Gottschalk,
(Debbie Dyke),

Vice-President and Secretary Needed

We continue to have no one volunteering for the positions of Vice-President and Secretary. The V-P really doesn't have much in the way of job duties as it is an optional position in terms of our non-profit status.

We do need someone to fill in the Secretary position, as it is a legal requirement to maintain our non-profit status. The Secretary is responsible for taking the minutes of the board meetings and dealing with general correspondence (which is minimal). The amount of time required for the job duties is about an hour and a half to two hours at the most, primarily for attending the monthly board meetings and typing up the minutes.

Board Members Needed

We also need more members to be on the board of directors. As of the first of the year, Debbie Dyke will no longer be on the Board, which means the board meetings are in jeopardy of being cancelled should more than one board member or officer be unable to attend. In order to conduct the meeting, one officer and at least two board members need to be present. With such a low number of officer and board members (two officers and two board members), it's getting more difficult to hold meetings. We are very much in need of more members being on the board of directors and taking an active part in the club.

Board members and the officers attend the monthly board meeting and make decisions involving the club. Meetings are in Livermore on the Monday following the lecture meeting, from 7:30 p.m. to around 8:30 or 9:00.

Should anyone wish to help, please contact any board member or club officer.

Newsletter header image: M1 (NGC 1952) The Crab Nebula

Feeling a little crabby? The Crab Nebula, the first item on Charles Messier's list, is a supernova remnant about 6,500 light years away in Taurus.

The supernova occurred on July 4th, 1054 AD and the event was recorded by Chinese and Arab astronomers, and Native Americans.

Image taken with Nellie, the 36-inch f/8 Cassegrain at the Chabot Space & Science Center, using a Canon 20Da. The total exposure time was 254 minutes (4hr 14 minutes).

Photo: Conrad Jung

Calendar of Events

Other Volunteer Positions Open

Program Director Needed

The program director is responsible for obtaining speakers for the lecture meetings. For the last few years, the board of directors have been doing a monthly scramble to find speakers. However, it would be much easier if one person could manage the task of coordinating the speakers, and sending out invitations to speak to Bay Area lecturers/professors.

All TVS members can help with getting speakers for the lecture meetings. If you hear of anyone that might be available and who's interested in giving a talk that's astronomical in nature, please let the Program Director (or at the very least, an officer or board member know) so that the lead can be pursued.

Refreshments Coordinator Needed

We need a volunteer to take on the responsibility of bringing refreshments to the lecture meetings, making the coffee and tea, and setting up and putting away the refreshments at the meetings. Money spent on this endeavour would be reimbursed by the club. The new volunteer will take over starting with the January meeting. Should no one volunteer, there will no longer be refreshments served at the meeting.

Web Master Needed

The web master would need to update the site at least once a month, uploading that month's newsletter (should it exist) and updating the home page and newsletter page. The Coming Events page should also be maintained, or if not, be removed from the web site and all links to it removed.

December 14, 4:15 p.m.

What: *Extrasolar Planetary Systems*

Who: Bruce Macintosh (LLNL)

Where: Panofsky Auditorium, SLAC National Accelerator Laboratory
2575 Sand Hill Road, Menlo Park

Cost: Free

More than 300 extrasolar planets are now known. Almost all have been detected indirectly—through radial velocity measurements or eclipses of their parent star. Direct detection—spatially resolving the planet from the star—opens up new areas of exoplanet phase space and new avenues for planet characterization. Macintosh will discuss the challenges in detecting such faint signals—a mature Jupiter-like planet is a billion times fainter than its parent star—and approaches to overcoming them. The promise of this approach was recently demonstrated with images of a planet orbiting Fomalhaut (Kalas et al 2008) and a three-planet system orbiting the young A star HR8799 (Marois et al 2008). Macintosh will discuss the latter in detail, and will summarize future prospects in this field, including advanced ground-based instrumentation and the path towards detection and characterization of Earthlike planets.

Bruce Macintosh completed his PhD at UCLA in 1994. He is currently a physicist at the Lawrence Livermore National Laboratory, working in astronomical adaptive optics, and an associate director for the National Science Foundation Center for Adaptive Optics. He is principal investigator for the Gemini Planet Imager, a next-generation instrument for the 8 meter Gemini South telescope designed to directly detect and spectroscopically characterize Jovian planets orbiting nearby stars.

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Officers

President:

Chuck Grant
cg@fx4m.com
925-422-7278

Vice-President:

unfilled

Treasurer:

David Feindel
feindel1@comcast.net

Secretary:

unfilled

Board of Directors

Jim Alves, Debbie Dyke,
Gert Gottschalk

Volunteer Positions

Librarian:

Jim Alves
Ajaengr@yahoo.com
209-833-9623

Newsletter Editor:

Debbie Dyke
astrodeb@comcast.net
925-461-3003

Program Director: unfilled

Loaner Scope Manager:

John Swenson
johnswenson1@comcast.net

Webmaster:

Debbie Dyke

Observatory Director/

Key Master:

Chuck Grant

School Star Party Chair:

unfilled

Public Star Party Chair:

unfilled

Historian:

unfilled

Mentor:

Mike Rushford
rushford@eyes-on-the-skies.org

Addresses

Mailing:

Tri-Valley Stargazers
P.O. Box 2476
Livermore, CA 94551

Lecture Meeting:

Unitarian Universalist Church
1893 N. Vasco Road, Livermore

Board & Discussion Meetings:

Round Table Pizza
1024 E. Stanley Blvd., Livermore

Web & E-mail

www.trivalleystargazers.org
tvs@trivalleystargazers.org

Eyes on the Skies

Eyes on the Skies is a robotic solar telescope run by Mike Rushford (rushford@eyes-on-the-skies.org). You may access it by visiting www.eyes-on-the-skies.org.

TVS E-Group

So how do you join the TVS e-group, you ask? Just send an e-mail message to the TVS e-mail address (trivalleystargazers@gmail.com) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.

Calendar of Events *continued*

December 16, 12:00 - 1:00 p.m.

What: *Exploring Alternative SETI Search Algorithms with the ATA*

Who: Gerry Harp (SETI Institute)

Where: SETI in Mountain View

Cost: Free

As a novel, many-element interferometer, the ATA supports radically different observing modes than any single-dish, yet performs very well in single-dish mode using beamformers. The cutting edge technology of ATA allows simultaneous data processing in 3 different modes: spectral imaging, ultra-high resolution single-point observing, and high speed data capture. The latter allows the application of any algorithm you can imagine on time-series data.

In this talk Dr. Harp describe several new or “almost new” SETI algorithms that have been explored or implemented on the ATA. Recent results from prototype SETI observations are shown. These new algorithms are contrasted with standard SETI analysis and Dr. Harp will show how they may augment the search on next generation of SETI analyzers.

This lunchtime talk is part of the SETI Institute Colloquium Series. Location is 515 N. Whisman Road, Mountain View, CA 94043. For more info, visit their web site <http://www.seti.org/csc/lectures>, e-mail info@seti.org, or phone 650-961-6633.

December 19, 11:00 a.m. - 12:00 p.m.

What: *Star Formation Through Radio Eyes*

Who: Dick Plambeck

Where: UC Berkeley, Genetics and Plant Biology Building, Room 100

Cost: Free

Stars and their planets are born inside dense clouds of gas and dust. These clouds are opaque to optical light, so one can witness the earliest stages of star formation only at radio wavelengths, via the weak signals emitted by molecules and dust grains. To obtain a clear view it's necessary to link together multiple radio telescopes, combining the signals from them with timing accuracies of a trillionth of a second. Dr. Plambeck will discuss both the technological challenges and recent discoveries, with examples from the recently completed CARMA telescope array in Eastern California.

Dick Plambeck is a research astronomer at UC Berkeley. He combines a scientist's interest in the processes involved in the birth of stars, with an engineer's interest in the methods used to study them, and a raconteur's talent for storytelling. He was involved in moving nine 20-foot-wide radio dishes hundreds of miles to a new site, and their subsequent positioning and calibrating to high accuracy in order to study the faint signals from gas and dust surrounding distant stars.

Limited hourly pay parking is available on weekends on and nearby campus - please check the signs. For more info about the talks, please visit <http://astro.berkeley.edu/~scroft/iya/>.

December 31, 10:45 a.m.

What: *10th Annual New Year's Eve Balloon Drop*

Who: Everyone

Where: Chabot Space & Science Center

Cost: Members \$4 per child. Non-Members \$4 per child plus General Admission

Start or continue a family tradition — celebrate New Year's Eve with your kids during the daytime. Kids will have a blast ringing in 2010 without staying up past their bedtime! Two locations available for kids of all ages to enjoy. Don't miss the celebration! SPACE IS LIMITED! Register: 510-336-7373

Drop Times:

10:45 a.m.: Ages 6 & Under (Rotunda)

12:45 p.m. & 3:45 p.m.: Ages 5 & Under (Discovery Lab) & Ages 6 & Up (Rotunda)

January 6, 12:00 - 1:00 p.m.

What: *Icy Bodies of the Outer Solar System: What Does The Spectroscopy Tell Us?*

Who: Dale Cruikshank (NASA Ames)

Where: SETI in Mountain View

Cost: Free

Details regarding this talk have not been posted. Please visit the SETI web site for any updates regarding the talk.

This lunchtime talk is part of the SETI Institute Colloquium Series. Location is 515 N. Whisman Road, Mountain View, CA 94043. For more info, visit their web site <http://www.seti.org/csc/lectures>, e-mail info@seti.org, or phone 650-961-6633.

January 13, 12:00 - 1:00 p.m.

What: *Impact Modeling: from LCROSS to Super-Earths*

Who: Erik Asphaug (UC Santa Cruz)

Where: SETI in Mountain View

Cost: Free

Details regarding this talk have not been posted. Please visit the SETI web site for any updates regarding the talk.

This lunchtime talk is part of the SETI Institute Colloquium Series. Location is 515 N. Whisman Road, Mountain View, CA 94043. For more info, visit their web site <http://www.seti.org/csc/lectures>, e-mail info@seti.org, or phone 650-961-6633.

Astro Events

Jupiter Transits

The following are a few listings of transit times for various Jupiter related objects. The abbreviations are: G=Ganymede, C=Callisto, I=Io, E=Europa, GRS=Great Red Spot, and if you see a 's' next to one of the moons, it means its shadow (e.g., Is=Io's shadow); na means Jupiter is below the horizon or it is daylight at that time.

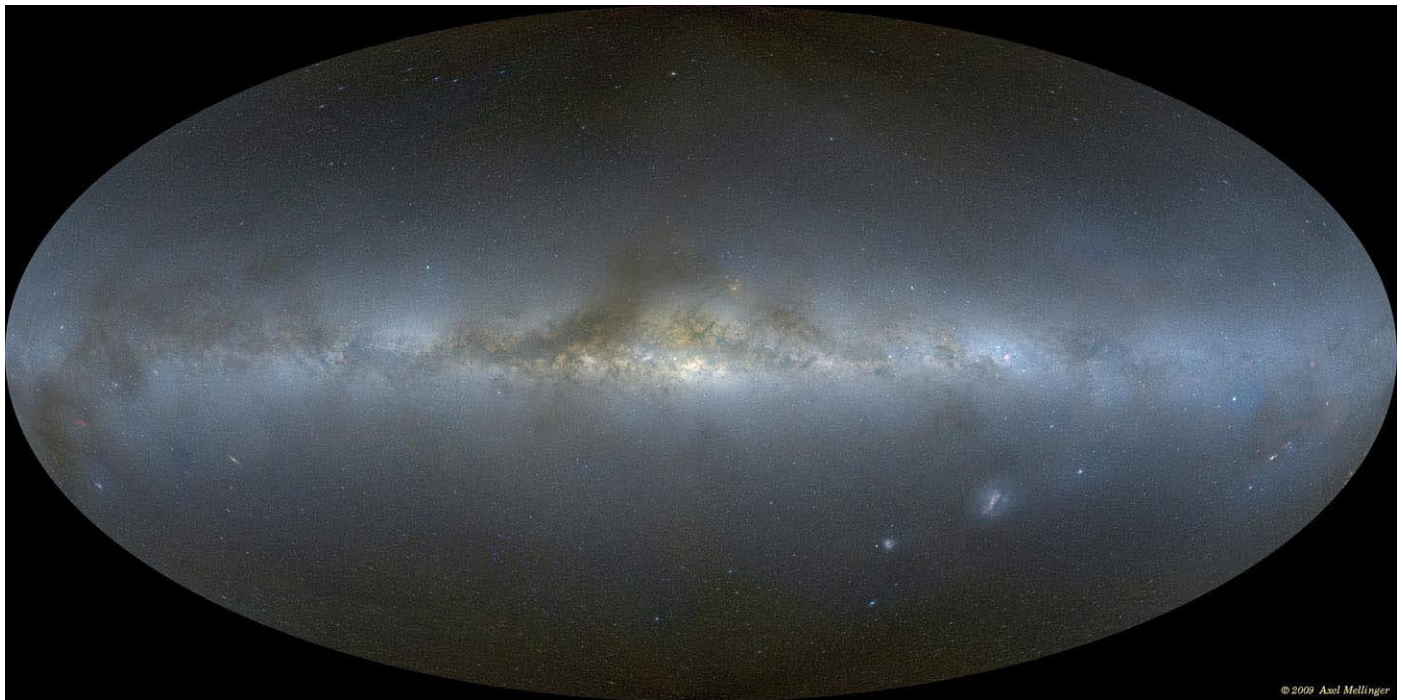
December

Fri 11	GRS	5:15p	7:00p	8:45p
	I	7:19p	8:26p	9:33p
	Is	8:26p	9:24p	na
Sun 13	GRS	6:55p	8:45p	na
Mon 14	E	8:24p	na	na
Wed 16	GRS	na	6:05p	8:10p
Fri 18	GRS	5:55p	7:45p	na
Sun 20	I	na	na	6:05p
	Is	na	5:45p	7:05p
	C	5:31p	7:25p	na
	GRS	7:35p	na	na
Mon 21	GRS	na	5:21p	7:20p
Wed 23	GRS	na	7:00p	8:50p

Fri 25	GRS	6:50p	8:30p	na
Sat 26	GRS	na	na	6:25p
	Gs	na	na	6:45p
Sun 27	I	5:47p	6:52p	8:03p
	Is	6:47p	7:45p	na
Mon 28	GRS	na	6:10p	8:05p
Wed 30	GRS	6:05p	7:48p	na

January

Fri 1	E	na	na	6:15p
	Es	5:14p	6:30p	8:03p
	GRS	7:35p	na	na
Sat 2	GRS	na	5:10p	7:05p
	G	na	na	7:08p
	Gs	7:19p	na	na
Mon 4	GRS	na	7:00p	na
Fri 8	E	6:12p	7:35p	na
	Es	7:52p	na	na
Sat 9	GRS	na	6:08p	7:53p
	G	7:58p	na	na
Tue 12	I	na	5:28p	6:36p
	Is	na	6:08p	7:20p



All-Sky Milky Way Panorama 2.0. In the late 90s, former TVS member Axel Mellinger decided to take photos of the Milky Way. All of it. He traveled to several countries to obtain the images, then wrote a computer program to stitch the images together to create an All-Sky Panorama. That image found it's way on to posters and coffee mugs. In the last two years, Axel had rephotographed the Milky Way, this time using a CCD camera. This new version has already made it to the Astronomy Picture of the Day. His web site (<http://home.arcor-online.de/axel.mellinger>) contains information regarding how the images were captured and processed, and he posted several versions of the image that enable visitors to zoom in on the image to see better detail. Photo: Axel Mellinger, A Color All-Sky Panorama Image of the Milky Way, *Publ. Astron. Soc. Pacific* 121, 1180-1187 (2009)

What's Up *by Debbie Dyke*

All times Pacific Standard unless otherwise noted.

December

- 13 Sun Geminid meteor shower peaks. 9:00 p.m.
- 14 Mon 1972 Gene Cernan (Apollo 17) becomes the last man on the Moon.
- 15 Tue 1970 Venera 7 becomes the first craft to land on Venus and transmit data back to Earth.
- 16 Wed **New Moon** (lunation 1076). 4:02 a.m.
- 17 Thur Muharram (Islamic New Year) 1431 begins at sundown.
- 18 Fri **Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.
Mercury at greatest elongation east (20°). 9:00 a.m.
- 19 Sat 1966 Space is declared a Nuclear Weapon Free Zone.
- 20 Sun Moon at apogee (251,553 miles). 7:00 a.m.
Jupiter 6° south of the Moon and 30' south of Neptune. 7:00 p.m.
- 21 Mon **Tri-Valley Stargazers Board meeting.** 7:30 p.m. at the Round Table Pizza on 1024 E. Stanley Blvd., Livermore.
Winter Solstice. 9:47 a.m.
1978 Venera 12 lands on Venus. Temps hover in the 860° F range.
- 22 Tue Ursid meteors shower peaks. 6:00 a.m.
- 24 Thur **First Quarter Moon.** 9:36 a.m.
Pluto in conjunction with the Sun. 10:00 a.m.
1968 Apollo 8 astronauts (Frank Borman, Frank Lovell, William Anders) are first to orbit the Moon.
- 25 Fri **Christmas Day.**
1642 Isaac Newton born.
- 26 Sat Kwanzaa begins.
- 27 Sun 1571 Johannes Kepler born.
- 28 Mon The Moon is 1°40' north of the Pleiades (M45). 7:00 p.m.
- 29 Tue 1566 Tycho Brahe loses his nose in a duel with Manderup Parsberg. He starts a fashion trend by wearing a metal nose.
- 30 Wed The southern edge of the Moon is 17' from M35. 9:45 p.m.
- 31 Thur **Full Moon** (Blue Moon). 11:13 a.m.

January

- 1 Fri **New Year's Day**
The southern limb of the Full Moon is 2'34" from the Eskimo (aka Clown Face) Nebula. 5:15 a.m.
1801 First asteroid (Ceres) discovered by Giuseppe Piazzi.
- 3 Sun 2004 NASA's Rover Spirit successfully lands on Mars.
1999 Mars Polar Lander launched.
- 6 Wed 1949 First atomic clock is built.
- 7 Thur **Last Quarter Moon.** 2:39 a.m.
1610 Galileo discovers Jupiter's moons Io, Europa, and Callisto.
- 8 Fri 1942 Steven Hawking born.
1642 Galileo died.
- 13 Wed 1610 Galileo discovers Ganymede.
- 14 Thur **New Moon.** 11:11 p.m.
1742 Edmond Halley dies.

A Cosmic Crash

by Patrick Barry and Dr. Tony Phillips

Two small planets hurtle toward each other at 22,000 miles per hour. They're on a collision course. With unimaginable force, they smash into each other in a flash of light, blasting streams of molten rock far out into space.

This cataclysmic scene has happened countless times in countless solar systems. In fact, scientists think that such collisions could have created Earth's moon, tilted Uranus on its side, set Venus spinning backward, and sheared the crust off Mercury.

But witnessing such a short-lived collision while pointing your telescope in just the right direction would be a tremendous stroke of luck. Well, astronomers using NASA's Spitzer space telescope recently got lucky.

"It's unusual to catch such a collision in the act, that's for sure," said Geoffrey Bryden, A cosmic Crashspitzer_an astronomer specializing in extrasolar planet formation at NASA's Jet Propulsion Laboratory and a member of the science team that made the discovery.

When Bryden and his colleagues pointed Spitzer at a star 100 light-years away called HD 172555, they noticed something strange. Patterns in the spectrum of light coming from nearby the star showed distinctive signs of silicon monoxide gas — huge amounts of it — as well as a kind of volcanic rock called tektite.

It was like discovering the wreckage from a cosmic car crash. The silicon monoxide was produced as the high-speed collision literally vaporized huge volumes of rock,

which is made largely of silicon and oxygen. The impact also blasted molten lava far out into space, where it later cooled to form chunks of tektite.

Based on the amount of silicon monoxide and tektites, Bryden's team calculated that the colliding planetary bodies must have had a combined mass more than twice that of Earth's moon. The collision probably happened between 1,000 and 100,000 years ago — a blink of an eye in cosmic terms.

The scientists used the Spitzer space telescope because, unlike normal telescopes, Spitzer detects light at invisible, infrared wavelengths.

"Spitzer wavelengths are the best wavelengths to identify types of rock," Bryden says. "You can pin down which type of rock, dust, or gas you're looking at."

Bryden says the discovery provides further evidence that planet-altering collisions are more common in other star systems than people once thought. The "crash-bang" processes at work in our own solar system may indeed be universal. If so, Spitzer has a front row seat on a truly smashing show.

See Spitzer Space Telescope's brand new Web site at <http://spitzer.caltech.edu/>. Kids can learn about infrared light and see beautiful Spitzer images by playing the new Spitzer Concentration game at <http://spaceplace.jpl.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.



Artist's rendering of cosmic collision involving two objects whose combined mass was at least twice that of our Moon. Discovered using the Spitzer Space Telescope in the planetary system of a star called HD 172555 100 light-years away.

News & Notes *continued*

Items For Sale

At the October meeting, we had many donated astronomical items for sale. What we didn't sell at the meeting was then put on Astromart and Craigslist. So far we've netted about \$825 for the club.

Now we're down to the miscellaneous bits and pieces. We'll be selling those bits and pieces, things like accessory trays, flocking paper, power adapters, little screws, couplings, and a tripod/pier thing, at the December pot luck meeting. The vast majority of items will be priced to sell—around \$1.00 a piece (or even \$1.00 a box!).

Between the hardware parts and the RASC Handbooks and Calendars, a lot of holiday shopping can be accomplished in just one night. Throw in a potluck dinner and you have the makings for a tasty and productive evening.

Tri-Valley Stargazers
P.O. Box 2476
Livermore, CA 94551



PRIMEFOCUS

Tri-Valley Stargazers Membership Application

Member agrees to hold Tri-Valley Stargazers, and any cooperating organizations or landowners, harmless from all claims of liability for any injury or loss sustained at a TVS function.

Name _____ Phone _____ e-mail _____

Address _____

Do not release my: _____ address, _____ phone, or _____ e-mail information to other TVS members.

- Membership category: _____ \$5 Student.
_____ \$30 Basic. You will receive e-mail notification when the PDF version of *Prime Focus* is available for download off the TVS web site.
_____ \$40 Regular. You will receive a paper version of *Prime Focus* in the mail.
_____ \$10 Hidden Hill Observatory (H2O) yearly access fee. You need to be a key holder to access the site.
_____ \$20 H2O key holder fee. (A refundable key *deposit*—key property of TVS).
_____ \$40 Patron Membership. Must be a member for at least a year and a key holder.
_____ \$34 One year subscription to *Astronomy* magazine.
_____ \$60 Two year subscription to *Astronomy* magazine.
_____ \$32.95 One year subscription to *Sky & Telescope* magazine. **Note:** Subscription to *S&T* is for new subscribers only. Existing subscribers please renew directly through *S&T*.
\$ _____ Tax deductible contribution to Tri-Valley Stargazers.
\$ _____ TOTAL – Return to: Tri-Valley Stargazers, P.O. Box 2476, Livermore, CA 94551

Membership information: Term is one calendar year, January through December. Student members must be less than 18 years old or still in high school.