PRIMEFOCUS
Tri-Valley Stargazers

April 2006

Meeting Info:

What
Under Nile Skies

Who
A Virtual Ed Krupp

When
April 21, 2006
Conversation 7:00 p.m.
Lecture at 7:30 p.m.

Where
Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

Inside

April Meeting

Under Nile Skies
Ed Krupp (sort of)

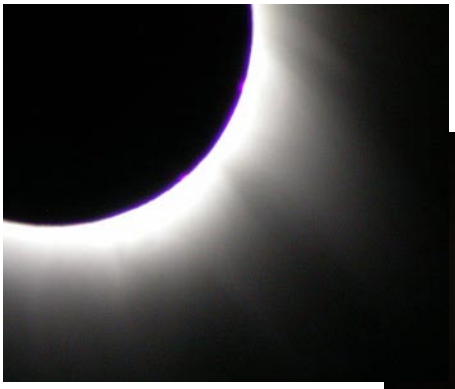
Try as we might, we weren't able to get a real live speaker for our April meeting. So, we'll have a virtual speaker instead.

During the solar eclipse cruise editor Debbie Dyke recently took, there was a series of lectures given on board the ship. All the lectures were recorded, and DVDs of the lectures were available for purchase at the end of the cruise.

For the April meeting, we will be showing one of the lectures. Ed Krupp, Observatory Director of the Griffith Observatory in Los Angeles, and a contributing writer to Sky & Telescope, gave a presentation titled *Under Nile Skies*. He discussed the importance of astronomy to the ancient Egyptians, and showed examples of artwork and hieroglyphics that depicted various astronomical beliefs held by the Egyptians.

The videos were not professionally filmed and edited in some fancy studio, so you'll hear ambient sounds (cough, cough. aachoo.) and see people's heads in the foreground. Nevertheless, the lectures are informative and entertaining.

Our May 19th meeting will be our eclipse night. Several TVS members traveled across the world to view and photograph the March 29th total solar eclipse from such locations as Turkey and Libya. If you saw the eclipse and would like to present your experience at the meeting, please let Debbie Dyke know so that she can coordinate the talks (ddfam [at] pacbell [dot] net or 925~461~3003). Here's a little sneak preview of some of the images you'll be seeing at the meeting:



Left: Section of corona, *photo by Debbie Dyke.*
Bottom: Diamond Ring, *photo by Gert Gottschalk.*

News & Notes

Money Matters

Treasurer **David Feindel** reports the TVS account balances (as of March 19, 2006):

Checking	$3,047.59	
CD #1	$3,508.90	matures 5/17/06
CD #2	$2,480.02	matures 5/27/06

2006 TVS Meeting Dates

Below are the TVS meeting dates for the next few months. The lecture meetings are on the third Friday of the month, with the Board meetings on the Monday following the lecture meeting. The *Prime Focus* deadline applies to that month's issue (e.g., the May 7th deadline is for the May issue).

Lecture Meeting	**Board Meeting**	***Prime Focus* Deadline**
Apr. 21	Apr. 24	Apr. 9
May 19	May 22	May 7
June 16	June 29	June 4
July 21	July 24	July 9

Jupiter Transits

Below is a few listings of transit times for various Jupiter related objects. The abbreviations are fairly straight forward: 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., Cs=Callisto's shadow); na means Jupiter is below the horizon or it is daylight at that time.

April

Thurs 20	GRS	na	10:53p	1:04a
	Is	11:03p	12:10a	1:12a
	I	11:24p	12:28a	1:29a
Sat 22	GRS	10:30p	12:36a	2:38a
Sun 23	GRS	na	na	10:28p
Tues 25	Es	na	na	8:54p
	E	na	na	9:16p
	GRS	na	9:57p	12:08a
Thurs 27	GRS	9:38p	11:42p	1:45a
	Is	12:58a	2:00a	3:06a
	I	1:07a	2:10a	3:16a
Sat 29	Is	na	8:31p	9:35p
	I	na	8:38p	9:40p
	GRS	11:10p	1:19a	3:19a

May

Tues 2	GRS	8:43p	10:50p	11:29p
	Es	8:56p	10:13p	11:31p
	E	9:03p	10:19p	12:47a
Thurs 4	GRS	10:26p	12:22a	2:30a
Fri 5	I	2:51a	3:55a	4:58a
	Is	2:51a	3:56a	4:59a
	GRS	na	8:18p	10:21p
Sat 6	I	9:17p	10:22p	11:24p
	Is	9:19p	10:27p	11:27p
	GRS	11:55p	2:00a	4:00a
Sun 7	GRS	8:00p	9:55p	12:00a
Tues 9	GRS	9:31p	11:33p	1:36a
	E	11:17p	12:32a	1:46a
	Es	11:31p	12:48a	2:04a
Wed 10	GRS	na	7:30p	9:27p
	G	10:00p	10:39p	11:30p
	Gs	10:21p	11:16p	12:15a
Fri 12	GRS	na	9:00p	11:00p
Sat 13	I	11:02p	12:03a	1:09a
	Is	11:14p	12:16a	1:23a
Sun 14	GRS	12:49a	2:46a	4:50a
	GRS	8:40p	10:43p	12:38a

TVS eGroups

Those of you who recently joined the club may not be aware that TVS has an online discussion group through Yahoo. It is the best way we have for the whole club to communicate quickly. Members also have access to other features such as a calendar, image and file sharing, customizable member home "portal" pages and a free web access only e-mail account (yourID@yahoo.com).

There are two ways you can sign up for the group.

Method 1:

To sign up to get all the features, go to http://groups.yahoo.com/group/trivalleystargazers/join

If you already have a Yahoo ID, you can sign in with it here. If you do not have a Yahoo ID, you can click the link to sign up for one for free.

Be sure to list the e-mail addresses where you will read and post to the list in the alternate e-mail addresses section (unless you want to only access the group through your Yahoo e-mail account). Be sure to set one of these addresses as your primary address (after verification) so your e-mail list messages are sent there.

Yahoo will send a verification code to each e-mail address list. Follow the instructions in the e-mail. Then your request will be sent to the group moderator for approval.

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Newsletter header image: Herbig-Haro 49/50

This "tornado" is actually a shock front created by a jet of material flowing downward from a still-forming star located off the upper edge of the image. *Credit: Spitzer Space Telescope - NASA, JPL-Caltech, J. Bally (Univ. of Colorado)*

Calendar of Events

April 26, 7:00 p.m.

What: *News from the Distant Past: How Galaxies Tell Their Stories*
Who: Ron Marzke (SFSU)
Where: Foothill College
Cost: Free. However, there is a $2 parking fee (need eight quarters)

San Francisco State University Astronomer Ron Marzke will present *News from the Distant Past: How Galaxies Tell Their Stories*, an illustrated, non-technical talk, Wednesday, April 26, at 7 p.m. in the Smithwick Theater at Foothill College. Admission is free and the public is invited to attend. A required parking permit is $2 (eight quarters).

Light from distant galaxies can take billions of years to reach our telescopes. But when the light finally arrives, it brings us news of ancient cosmic events as they unfold. Marzke is part of a team of astronomers who have recently found major surprises in the light of galaxies from far away and long ago. In particular, they discovered a surprisingly large population of massive galaxies, which were already fully assembled when the universe was less than half its current age. He will discuss how astronomers are taking advantage of the "time machine" built into the travel time of light in the universe to understand how galaxies like our own Milky Way formed and evolved. He is an associate professor in the SFSU Physics & Astronomy Department. He specializes in measurements of the structure of galaxies and the stars they contain, as well as the large-scale distribution of the galaxies. He is a member of the Gemini Deep-Deep Survey team, which is probing the history of galaxies.

Founded by Foothill Astronomy Instructor Andrew Fraknoi, the Silicon Valley Astronomy Lecture Series is co-sponsored by NASA Ames Research Center, Foothill College, SETI Institute and Astronomical Society of the Pacific. For more information, call 650-949-7888.

April 29, 8:30 p.m.

What: *Small Worlds in the Distant Solar System*
Who: Dr. Dale Cruikshank (NASA-Ames Research Center)
Where: Mt. Tamalpais Mt. Theater (www.mttam.com)
Cost: Free

We are in the midst of exploring small objects with giant telescopes and with spacecraft, such as Cassini now visiting Saturn and New Horizons on route to Pluto.

The programs are FREE and open to the general public. Families, students and youth groups are encouraged to attend. The Madrone Picnic area is reserved from 6:30 p.m. and the talk will be followed by telescope viewing in the Rock Spring Parking Area until around 11:30 p.m. Dress warmly and bring a flashlight. Carpool if possible.

If you can volunteer to help out, call Tinka Ross at 415-454-4715.

Sponsored by your State Park, assisted by the Mount Tamalpais Interpretive Association and telescopes courtesy of the San Francisco Amateur Astronomers.

If the weather is iffy the day of the program, call the hotline 415-455-5370. The message changes around 3:00 p.m., but only if there is a cancellation. If the programs will go as scheduled the tape will not be updated. You can also check with SFAA at 415-289-NOFOG.

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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 (tvs@trivalleystargazers.org) 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*

May 1, 7:30 p.m.

What: *Unpacking a Suitcase Full of Starlight: Probing the Cores of Stars to the Clouds of Exoplanets.*
Who: Dr. Jaymie Matthews (Univ. of British Columbia, MOST Mission Scientist)
Where: S.F. Jewish Community Center
Cost: $4

The Canadian MOST satellite is the most precise lightmeter ever built to study stars. Since 2003, it has seismically probed the hidden cores of Sun-like stars, mapped the complexion of a "pre-teen" version of the Sun, and studied the cloud cover on a planet we can't even see 160 light years away. Not bad for a microsat nicknamed the "Humble Space Telescope," which is not much bigger than a suitcase, and cost only $7 million.

During the reconstruction of the Academy, the Dean Lectures have temporarily moved to the San Francisco Jewish Community Center at 3200 California Street (at Presidio Avenue). Parking is available across the street in the UCSF Laurel Heights campus parking lot for $1.25 per night. Parking in the JCC garage is $1.25 per half-hour. The #1 California, #3 Jackson, #4 Sutter, and #43 Masonic MUNI lines stop directly in front of the building. The #38 Geary and #24 Divisadero buses stop only a few blocks away.

All programs begin at 7:30 pm in Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street. Tickets are $4 and are available in advance or at the door.

May 6, 7:30 p.m.

What: *Astronomy Day*
Who: California Academy of Sciences
Where: San Francisco
Cost: $7 adults; $4.50 for youth 12-17, Seniors 65+ and students with ID; $2 for kids 4-11; free for kids 3 and under.

The Academy will present a full day of astronomy-related events, including a talk by Jill Tarter of the SETI Institute about the ongoing search for extra-terrestrial intelligence, a presentation by science historian John Dillon about the first telescope ever made, and the chance to observe the sun safely if weather permits.

In addition, members of the San Francisco Amateur Astronomers, the Astronomical Society of the Pacific, and NASA will be available for questions and hands-on activities. And be sure to enter a raffle for various astronomy-related goods, or pick up free materials courtesy of Astronomy magazine. All programs are free with museum admission.

For those who can't wait for Astronomy Day, visit the Academy's web site at www.calacademy.org/planetarium to download Sky Tour, a free audio tour of the night sky presented by the California Academy of Sciences and the Environmental News Network.

You can sign up for a stargazing session with Bing Quock, staff astronomer, that will be held at the San Francisco Botanical Garden. Available dates are April 28 and May 26, times are from 8:30 to 10 p.m. The night-sky viewing sessions include a laser-guided tour of the heavens and a deeper exploration with binoculars and a telescope. Dress warmly, bring a quality pair of binoculars (if you have them), a red-colored flashlight to preserve your night-vision, and your curiosity about the night sky! Class is cancelled in the event of cloudy weather. Classes cost $12 per person or $18 per family ($8 per person or $13 per family for Academy members). For more information, call 415-661-1316 x354.

The California Academy of Sciences is open to the public at 875 Howard Street. Hours are 10 a.m. to 5 p.m. every day. www.calacademy.org, 415-321-8000.

For more information: Stephanie Stone at 415-321-8119, sstone@calacademy.org

Astronomer Information Flyer

BE A VISITING ASTRONOMER IN YOUR LOCAL SCHOOL

Get Free Training and Materials with Project ASTRO

PROJECT ASTRO

Project ASTRO is looking for amateur or professional astronomers who would like to work with teachers and students in 3rd - 9th grade classrooms. This is a great opportunity to help kids learn science, sharing your love of astronomy with the most enthusiastic audience you can find (and sharpening your teaching or communication skills in the process.)

Through Project ASTRO, you will be paired in a one-on-one partnership with a Bay Area teacher at a school near you. Together, astronomer and teacher partners attend a free two-day summer training workshop where they learn effective hands-on astronomy activities and receive a copy of Project ASTRO's rich curriculum resource book, "The Universe at Your Fingertips", materials to lead hands-on activities, invitations to additional workshops, and access to the Project ASTRO lending library.

The project emphasizes ongoing partnerships, not just one-time class visits. During the school year, astronomers make at least four visits to their adopted classroom at mutually convenient times. The program has been operating for over 10 years in the Bay Area, and previous participants often report that it has been one of the most satisfying volunteer endeavors they have undertaken.

Astronomer applications are now being accepted for the 2006 - 2007 school year. The deadline is May 5. Space is limited to 30 partnerships. All participants must attend a hands-on training workshop, which will be held August 4 & 5, 2004, at the San Mateo County Office of Education in Redwood City.

More information and astronomer application forms are available online from:

http://www.astrosociety.org/baprojectastro.html

Or contact:
Project ASTRO
Bay Area Coordinator
390 Ashton Avenue
San Francisco, CA 94112;
Tel. 415-337-1100 ext. 101;
E-mail: bayareaastro@astrosociety.org

Project ASTRO, a program of the nonprofit Astronomical Society of the Pacific, began with support from the National Science Foundation and the NASA Office of Space Science. It has now expanded to 12 other sites around the country and has trained over 2,000 astronomer-teacher partnerships.

What's Up *by Debbie Dyke*

All times Pacific Daylight Saving Time unless otherwise noted.

April

9 Sun Moon at apogee (251,441 miles).

12 Wed 1961 Yuri Gagarin becomes the first man to orbit the Earth (orbit lasted 1h 48m)
"Circling the Earth in the orbital spaceship I marvelled at the beauty of our planet. People of the world! Let us safeguard and enhance this beauty—not destroy it!"
1981 First space shuttle, Columbia, launched.

13 Thurs **Full Moon**. 9:40 a.m.
1970 Apollo 13 disaster strikes.

14 Fri Jupiter less than 6° away from the Moon during the evening as they rise together in the eastern skies.
1629 Christiaan Huygens born.

16 Sun Easter.
The Moon less than 1° from Antares as they rise in the late evening.

18 Tues Venus just 18' north from Uranus as they both rise in the east in the morning.
1955 Albert Einstein dies.

20 Thurs **Last Quarter Moon**. 8:28 p.m.
1972 Apollo 16 lands on the Moon at Descartes.

21 Fri Lyrid meteors peak. 9:00 a.m.
Neptune 5° from the Moon in the evening skies.
Tri-Valley Stargazers general meeting. 7:30 p.m. at the Unitarian Universalist Church, 1893 N. Vasco Road, Livermore.

22 Sat Earth Day. Hug a tree.

23 Sun **Tri-Valley Stargazers discussion meeting**. 2:00 p.m. at the Round Table Pizza on 1024 E. Stanley Blvd., Livermore. Discuss astro stuff with your fellow members.
Texas Star Party starts today and runs through April 30 near Fort Davis, TX.

24 Mon Look for the thin crescent Moon and Venus 1.5° apart in the early morning eastern skies.
Tri-Valley Stargazers Board meeting. 7:00 p.m. at the Round Table Pizza in Livermore.

25 Tues Moon at perigee (225,513 miles). 4:00 a.m.
1990 Hubble Space Telescope deployed from shuttle Discovery.

27 Thurs **New Moon**. 12:44 p.m.
4977 B.C. According to Kepler, the Creation occurs on this date.

28 Fri Mercury at greatest heliocentric latitude south.

May

1 Mon Mars 4.5° south of the Moon as they set in the west. 11:00 p.m.
1006 A supernova in Lupus is discovered by Ali ibn Ridwan, with the Japanese, Chinese, and a Swiss monk also recording the event.

3 Wed The Moon 5° away from Saturn, and 6° away from the Beehive Cluster (M44) during the evening.
Jupiter at opposition. 8:00 a.m.

4 Thurs Eta Aquarid meteors peak. 10:00 p.m.
First Quarter Moon. 10:13 p.m.

5 Fri 1961 Alan Shepard becomes the first American in space with a 15 minute ride on Freedom 7. He was paid $14.38.

7 Sun Moon at apogee (250,834 miles). 12:00 a.m.

Planets in Strange Places

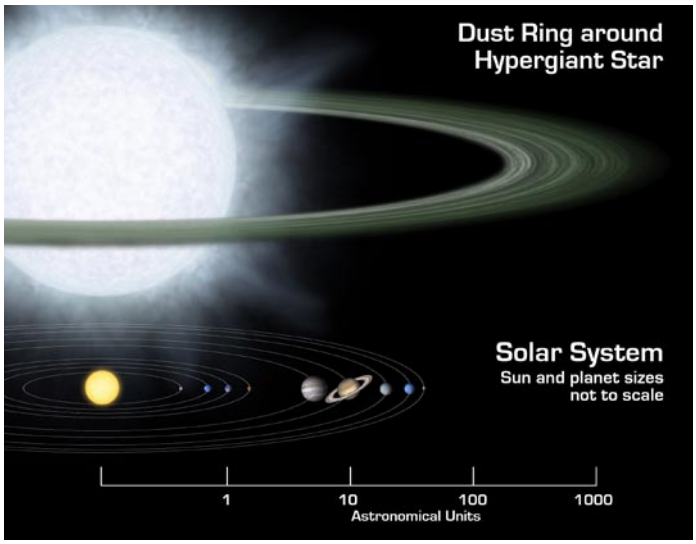
by Trudy E. Bell

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 recent discoveries 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. (Note: This brown dwarf discovery was made by a group led by Kevin Luhman of Pennsylvania State University.)



Artist's rendering compares size of a hypothetical hypergiant star and its surrounding dusty disk to that of our solar system.

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 www.spitzer.caltech.edu/. For kids, the Infrared Photo Album at The Space Place (spaceplace.nasa.gov/en/kids/sirtf1/sirtf_action.shtml) introduces the electromagnetic spectrum and compares the appearance of common scenes in visible versus infrared light.

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

News & Notes *continued*

Once your TVS membership is verified, your e-group membership will be approved and you will receive an e-mail telling you you are approved.

Method 2:

If for some reason you do not want to sign up with Yahoo, you can still participate in the e-mail discussion group part of the TVS Yahoo group, but will not get all the features.

Send an e-mail to Chuck Grant at cg [at] fx4m [dot] com asking to join without a Yahoo ID. Specify the e-mail address from which you will read and post. That's all.

Using the group

You can send e-mail to the group (which will be sent to all the members and stored in the archive) by:

Replying to someone's post on the group

Sending e-mail directly to trivalleystargazers@yahoogroups.com.

Or logging into the web site, http://groups.yahoo.com/group/trivalleystargazers, and selecting "post" under "messages" in the menu on the left side of the page.

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.
_____ $32.95 One year subscription to *Sky & Telescope* magazine.
_____ $34 One year subscription to *Astronomy* magazine.
_____ $60 Two year subscription to *Astronomy* magazine.
_____ $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.
$_____ 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.