

# PRIME FOCUS

Tri-Valley Stargazers

April 2009



## Meeting Info:

### What

*Irreproducible Results from the Journal*

### Who

Norm Sperling

### When

April 17, 2009  
Doors open at 7:00 p.m.  
Lecture at 7:30 p.m.

### Where

Unitarian Universalist  
Church in Livermore  
1893 N. Vasco Road

## Inside

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## April Meeting

Irreproducible Results from the Journal  
*Norm Sperling*

The science-humor magazine's new anthology, *This Book Warps Space and Time*, blends fresh and classic wit from *The Journal of Irreproducible Results*. Editor Norm Sperling performs this fast-paced frolic of quirky tidbits from science, math, academe, bureaucracy, and wordplay. Skits may include:

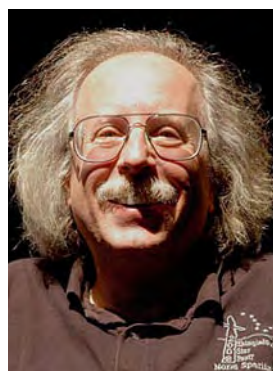
- \* Security issues with bubblewrap, and Mentos.
- \* "Light bulbs" are actually "dark-suckers".
- \* What if dot-com became dot-cow, and dot-org became dot-arg?
- \* Stretching points on Spandex graphs.
- \* Laws beyond Murphy's.
- \* Wacky warning labels.
- \* Inspired techno-babble.
- \* Student bloopers.

Good wit for people with good wits! Invite your technically-minded friends. There'll be copies of his books for sale, and he'll be happy to autograph them:

*This Book Warps Space and Time*: \$12.99 + tax

*What Your Astronomy Textbook Won't Tell You*: \$24.95 + tax

*The Journal of Irreproducible Results*: single copies \$5.95; subscriptions \$26.95



Norm Sperling teaches freshman astronomy at UC Berkeley, for which he wrote his previous book, "What Your Astronomy Textbook Won't Tell You". He began subscribing and contributing articles to JIR in the 1970s, and became editor in 2004. He has been a planetarium director, co-designed the Edmund Astroscan telescope, and testified as an expert witness on astronomy in jury trials.

Web sites:

*This Book Warps Space and Time*: [www.andrewsmcmeel.com/products/?isbn=0740777130](http://www.andrewsmcmeel.com/products/?isbn=0740777130)

*The Journal of Irreproducible Results*: [www.jir.com](http://www.jir.com)

Norman Sperling: [en.wikipedia.org/wiki/Norman\\_Sperling](http://en.wikipedia.org/wiki/Norman_Sperling)

Spandex graphs: [makerfaire.com/pub/e/1145](http://makerfaire.com/pub/e/1145)

What Your Astronomy Textbook Won't Tell You: [www.amazon.com/What-Your-Astronomy-Textbook-Wont/dp/0913399043](http://www.amazon.com/What-Your-Astronomy-Textbook-Wont/dp/0913399043)

## News & Notes

### 2009 TVS Meeting Dates

The following lists 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 March 8th deadline is for the March issue).

| Lecture Meeting | Board Meeting | Prime Focus Deadline |
|-----------------|---------------|----------------------|
| Apr. 17         | Apr. 20       | Apr. 5               |
| May 15          | May 18        | May 3                |
| June 19         | June 22       | June 7               |

### Money Matters

Treasurer David Feindel reported the TVS account balances as of March 23rd, 2009.

|          |            |                 |
|----------|------------|-----------------|
| Checking | \$4,069.38 |                 |
| CD #1    | \$3,756.74 | matures 5/17/09 |
| CD #2    | \$2,651.71 | matures 5/27/09 |

Church and H2O rents have been paid, as have our dues to the WAA.

## Calendar of Events

### April 15, 12:00 - 1:00 p.m.

**What:** *The Dynamic Lunar Environment*  
**Who:** Jasper Halekas (UC Berkeley Space Sciences Laboratory)  
**Where:** SETI in Mountain View  
**Cost:** Free

The lunar environment, serene and unchanging to the naked eye, seethes with plasma and electromagnetic activity. Plasma, photons, micrometeorites and energetic particles constantly bombard the lunar surface, producing a tenuous exosphere and a dynamic wake region, and charging the surface to electrostatic potentials reaching kilovolts, producing surface electric fields large enough to affect lunar ions and dust. Meanwhile, plasma interacts directly with crustal magnetic fields, producing perhaps the smallest magnetospheres in the solar system. Dr. Halekas will talk about how the Moon provides an ideal laboratory to study a variety of fundamental physics processes which are both interesting in their own right, and potentially applicable to Mars and other planets in the solar system.

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

### April 18, 12:00 p.m. - 3:00 p.m.

**What:** *Multiple Lectures*  
**Who:** Multiple Speakers  
**Where:** UC Berkeley, Genetics and Plant Biology Building, Room 100 & 3 Le Conte  
**Cost:** Free

In celebration of Cal Day, UC Berkeley is hosting an Open House. Part of the celebration will be three astronomy lectures.

From 12:00-1:00 p.m., at 100 Genetics & Plant Biology Bldg, Chung-Pei Ma will be talking about "The Dark Side of the Universe".

From 1:00-2:00 p.m. at 3 Le Conte, Dan Werthimer will talk about "Is Anybody Out There? Searching for ET with Help from 8 Million Volunteers".

From 2:00-3:00 p.m., at 3 Le Conte, Steve Stahler will talk about "Why Are There Stars? New Answers to an Old Question".

Cal Day organizers are expecting thousands of visitors, so parking may be a challenge. Limited hourly pay parking is available; please check the signs. You are encouraged to take public transport—BART and bus lines are within walking distance. For more information about the talks, please visit <http://astro.berkeley.edu/~scroft/iya/>.

### April 22, 12:00 - 1:00 p.m.

**What:** *First Things in the Universe*  
**Who:** Tom Abel (Kavli Institute for Particle Astrophysics and Cosmology Laboratory, Stanford University)  
**Where:** SETI in Mountain View  
**Cost:** Free

The first structure to form in the Universe can now be predicted from ab initio simulations starting with the known initial conditions of our Universe. What is found is a rich history with massive stars, black holes, UV radiation, and hydrogen molecules among others playing significant roles. Using supercomputer simulations allows us to visually show the origin of the first stars, their demise and impact on their future, which is our past, in the Universe's first billion years.

This lunchtime talk is part of the SETI Institute Colloquium Series. Location is 515 N. Whisman Road, Mountain View, CA USA 94043. For more info, visit

#### Newsletter header image: Arp 274

Arp 274, aka NGC 5679, is a cluster of three galaxies 400 million light years away in the constellation of Virgo. New stars are being formed in the pink nebulae, and clusters of new blue stars can be seen in the arms of the galaxies. Photo: NASA, ESA, M. Livio and the Hubble Heritage Team (STScI/AURA)



M82 (L) and M81 (R), 5" f/6.3 APO and flattener, RGB 55:55:45min; ST10XME 1x1 -20C, March 2009. Photo: Gert Gottschalk

their web site <http://www.seti.org/csc/lectures>, e-mail [info@seti.org](mailto:info@seti.org), or phone 650-961-6633.

**April 22, 7:00 - 8:30 p.m.**

**What:** *Planetary Protection & Hitchhikers in the Solar System: The Danger of Mingling Microbes*

**Who:** Dr. Margaret Race (SETI Institute)

**Where:** Smithwick Theatre at Foothill College

**Cost:** Free, but parking is \$2 (in quarters)

Scientists searching for life elsewhere have to worry about avoiding harmful cross contamination during the exploration of planets and their moons. We don't want to take Earth microbes to Mars or bring back alien microbes to Earth. In this timely talk, Dr. Race will give a behind-the-scenes view of environmental management planning for solar system missions, and explain the role of the

Outer Space Treaty and other related national and international policies. She will also discuss the varied societal issues likely to arise from discoveries about life beyond the Earth-issues about the meaning of life, its future evolutionary trajectory, and environmental sustainability in the universe.

Dr. Race is an ecologist at the SETI Institute who works with NASA and the international space community to develop, refine and apply planetary protection policies to missions to the planets. She has organized and edited proceedings for a number of conferences in this field, and served on panels evaluating contamination danger for the National Research Council. She has a strong interest in communicating science to the public, having worked at both the Environmental Protection Agency and KQED Television.

The free lecture series is sponsored by the Foothill College Astronomy Program, NASA Ames Research Center, SETI Institute and Astronomical Society of the Pacific. Past lectures from the series are available online in MP3-format.

Visitors must purchase a campus parking permit for \$2. Parking lots 1, 7 and 8 provide stair and no-stair access to the theatre. For more information, access [www.foothill.edu](http://www.foothill.edu) or call (650) 949-7888.

**April 23, 7:00 - 9:00 p.m.**

**What:** *Leakey & Darwin: Revolutionaries: Why Darwin Matters: Evolution, Intelligent Design, and the Battle for Science and Religion*

**Who:** Dr. Michael Shermer (Claremont Graduate University)

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| <p><b>Officers</b></p> <p><b>President:</b><br/>Chuck Grant<br/><a href="mailto:cg@fx4m.com">cg@fx4m.com</a><br/>925-422-7278</p> <p><b>Vice-President:</b><br/>unfilled</p> <p><b>Treasurer:</b><br/>David Feindel<br/><a href="mailto:feindel1@comcast.net">feindel1@comcast.net</a></p> <p><b>Secretary:</b><br/>David Woolsey<br/><a href="mailto:fatdawg@comcast.net">fatdawg@comcast.net</a></p> <p><b>Board of Directors</b><br/>Alane Alchorn, Jim Alves,<br/>Debbie Dyke, Gert Gottschalk,<br/>Mike Rushford, John Swenson.</p> | <p><b>Volunteer Positions</b></p> <p><b>Librarian:</b><br/>Jim Alves<br/><a href="mailto:Ajaengr@yahoo.com">Ajaengr@yahoo.com</a><br/>209-833-9623</p> <p><b>Newsletter Editor:</b><br/>Debbie Dyke<br/><a href="mailto:astrodeb@comcast.net">astrodeb@comcast.net</a><br/>925-461-3003</p> <p><b>Program Director:</b> unfilled</p> <p><b>Loaner Scope Manager:</b><br/>John Swenson<br/><a href="mailto:johnswenson1@comcast.net">johnswenson1@comcast.net</a></p> <p><b>Webmaster:</b><br/>Debbie Dyke</p> <p><b>Observatory Director/<br/>Key Master:</b><br/>Chuck Grant</p> <p><b>School Star Party Chair:</b><br/>unfilled</p> | <p><b>Public Star Party Chair:</b><br/>unfilled</p> <p><b>Historian:</b><br/>Debbie Dyke</p> <p><b>Mentor:</b><br/>Mike Rushford<br/><a href="mailto:rushford@eyes-on-the-skies.org">rushford@eyes-on-the-skies.org</a></p> <p><b>Addresses</b></p> <p><b>Mailing:</b><br/>Tri-Valley Stargazers<br/>P.O. Box 2476<br/>Livermore, CA 94551</p> <p><b>Lecture Meeting:</b><br/>Unitarian Universalist Church<br/>1893 N. Vasco Road, Livermore</p> <p><b>Board &amp; Discussion Meetings:</b><br/>Round Table Pizza<br/>1024 E. Stanley Blvd., Livermore</p> | <p><b>Web &amp; E-mail</b><br/><a href="http://www.trivalleystargazers.org">www.trivalleystargazers.org</a><br/><a href="mailto:trivalleystargazers@gmail.com">trivalleystargazers@gmail.com</a></p> <p><b>Eyes on the Skies</b><br/>Eyes on the Skies is a robotic solar telescope run by Mike Rushford (<a href="mailto:rushford@eyes-on-the-skies.org">rushford@eyes-on-the-skies.org</a>). You may access it by visiting <a href="http://www.eyes-on-the-skies.org">www.eyes-on-the-skies.org</a>.</p> <p><b>TVS E-Group</b><br/>So how do you join the TVS e-group, you ask? Just send an e-mail message to the TVS e-mail address (<a href="mailto:trivalleystargazers@gmail.com">trivalleystargazers@gmail.com</a>) asking to join the group. Make sure you specify the e-mail address you want to use to read and post to the group.</p> |
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## What's Up *by Debbie Dyke*

All times Pacific Daylight unless otherwise noted.

### April

- 9 Thur **Full Moon.** 7:56 a.m.  
1959 NASA selects first seven astronauts.
- 11 Sat Mercury at perihelion.
- 12 Sun Easter  
1981 First space shuttle, Columbia, launched.
- 13 Mon The Moon occults the Cat's Eye Nebula and NGC 6121. 2:40 a.m.  
The Moon passes 40' by Antares. 6:00 a.m.  
The Moon is 1° from Al Niyat. By sunrise, it's 30' from Antares. 5:00 a.m.  
1970 Apollo 13 disaster strikes.
- 15 Wed Venus stationary. 1:00 a.m.  
Mars 26' south of Uranus. 6:00 a.m.
- 16 Thur Moon at apogee (250,625 miles). 2:00 a.m.
- 17 Fri **Tri-Valley Stargazers general meeting.** 7:30 p.m. at the Unitarian Universalist Church,  
1893 N. Vasco Road, Livermore.  
**Last Quarter Moon.** 6:36 a.m.
- 18 Sat 1971 Salyut 1 is launched by the USSR, becoming the first space station.
- 19 Sun Moon 1.5° from Jupiter. 5:00 a.m.
- 20 Mon **Tri-Valley Stargazers Board meeting.** 7:30 p.m. at the Round Table Pizza on 1024  
E. Stanley Blvd., Livermore.  
1972 Apollo 16 lands on the Moon at Descartes.
- 21 Tue Mercury at greatest heliocentric latitude north.  
Mars at perihelion.
- 22 Wed Lyrid meteor shower peaks. 3:00 a.m.  
**Venus occulted by the Moon.** First contact-5:11 a.m.; 2nd contact-5:12:52 a.m.;  
3rd contact-6:05:51 a.m.; 4th contact-6:07:20 a.m.  
Earth Day.
- 24 Fri **New Moon** (lunation 1068). 8:23 p.m.
- 25 Sat 1990 Hubble Space Telescope deployed from shuttle Discovery.
- 26 Sun Mercury at greatest elongation east (20°). 1 a.m.  
Mercury is low in the sky, the Pleiades 3°11' above it and the thin crescent Moon 3°20' above  
the Pleiades. 9:00 p.m.  
1962 Kosmos 4 becomes the first Soviet photo reconnaissance satellite launched.
- 27 Mon Moon at perigee (226,944 miles). 11:00 p.m.
- 28 Tue The Moon 1.8° from M35. 6:00 p.m.
- 30 Thur Mercury 1°30' from the Pleiades, low in the evening sky. 9:00 p.m.

### May

- 1 Fri **First Quarter Moon.** 1:44 p.m.
- 2 Sat Venus greatest illuminated extent. 8:00 a.m.  
The Moon is 3°15' from Regulus. 10:00 p.m.
- 5 Tue 1961 Alan Shepard becomes the first American in space with a 15 minute ride on Freedom 7.  
He was paid \$14.38.
- 6 Wed The Moon is 3°35' from Spica. 11:00 p.m.



## Apollo Upgrade

The flight computer onboard the Lunar Excursion Module, which landed on the Moon during the Apollo program, had a whopping 4 kilobytes of RAM and a 74-kilobyte “hard drive.” In places, the craft’s outer skin was as thin as two sheets of aluminum foil.

It worked well enough for Apollo. Back then, astronauts needed to stay on the Moon for only a few days at a time. But when NASA once again sends people to the Moon starting around 2020, the plan will be much more ambitious—and the hardware is going to need a major upgrade.

“Doing all the things we want to do using systems from Apollo would be very risky and perhaps not even possible,” says Frank Peri, director of NASA’s Exploration Technology Development Program.

So the program is designing new, more capable hardware and software to meet the demands of NASA’s plan to return humans to the moon. Instead of staying for just a few days, astronauts will be living on the Moon’s surface for months on end. Protecting astronauts from harsh radiation at the Moon’s surface for such a long time will require much better radiation shielding than just a few layers of foil. And rather than relying on food and water brought from Earth and jettisoning urine and other wastes, new life support systems will be needed that can recycle as much water as possible, scrub carbon dioxide from the air without depending on disposable filters, and perhaps grow a steady supply of food—far more than Apollo life-support systems could handle.

Next-generation lunar explorers will perform a much wider variety of scientific research, so they’ll need vehicles that can carry them farther across the lunar surface.



The Chariot Lunar Truck is one idea for a vehicle equal to the lunar terrain. Each of the six wheels pivot in any direction, and two turrets allow the astronauts to rotate 360°.

ETDP is building a new lunar rover that outclasses the Apollo-era moon buggy by carrying two astronauts in a pressurized cabin. “This vehicle is like our SUV for the Moon,” Peri says.

The Exploration Technology Development Program is also designing robots to help astronauts maintain their lunar outpost and perform science reconnaissance. Making the robots smart enough to take simple verbal orders from the astronauts and carry out their tasks semi-autonomously requires vastly more powerful computer brains than those on Apollo; four kilobytes of RAM just won’t cut it.

The list goes on: New rockets to carry a larger lunar lander, spacesuits that can cope with abrasive moon dust, techniques for converting lunar soil into building materials or breathable oxygen. NASA’s ambitions for the Moon have been upgraded. By tapping into 21st century technology, this program will ensure that astronauts have the tools they need to turn those ambitions into reality.

Learn more about the Exploration Technology Development Program at [www.nasa.gov/directorates/esmd/aboutesmd/acd/technology\\_dev.html](http://www.nasa.gov/directorates/esmd/aboutesmd/acd/technology_dev.html). Kids can build their own Moon habitat at [spaceplace.nasa.gov/en/kids/exploration/habitat](http://spaceplace.nasa.gov/en/kids/exploration/habitat).

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

## Calendar of Events *continued*

**Where:** Morrison Planetarium, San Francisco  
**Cost:** Adults \$10, Seniors \$8, Members \$8  
 Reservations recommended.

Dr. Shermer is a prolific author and has written extensively about science and pseudoscience, the evolutionary origins of morality, and also a biography of Alfred Russel Wallace. In this talk, he will focus on why evolution and why not intelligent design.

This talk is jointly presented with the Leakey Foundation. Dr. Shermer is the Executive Director of Skeptics Society and Adjunct Economics Professor, Claremont Graduate University

Ticket prices: Adults \$10, Seniors \$8, Academy Members and Leakey Foundation Members \$8. To make a reservation or to purchase a ticket, call 800-794-7576. Due to anticipated demand for this event, all ticket holders should be seated by 6:45 pm.

At the conclusion of the lecture, attendees may enjoy NightLife in the Academy.

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.