

PRIME FOCUS

Tri-Valley Stargazers

October 2008



Meeting Info:

What

From Stardust to Planets via Silicon: Computer Experiments and Planet Formation

Who

Dr. Jeff Oishi

When

October 17, 2008
Doors open 7:00 p.m.
Lecture at 7:30 p.m.

Where

Unitarian Universalist
Church in Livermore
1893 N. Vasco Road

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October Meeting

From Stardust to Planets via Silicon: Computer Experiments and Planet Formation

Dr. Jeff Oishi

How did the Earth form? What about the other planets in the Solar System? What about the hundreds of planets orbiting stars other than the Sun that we have detected so far? The basic idea, that they somehow formed out of a flat disk of material surrounding their host star, was described by Immanuel Kant in 1755. In the intervening 253 years, we have collected a significant amount of data to support this picture, but we have filled in surprisingly few of the details. However, the dramatic advances in computing over the past thirty years have allowed physicists to make theoretical breakthroughs that are starting to give us a rich and detailed understanding of how planets form. I will discuss what we know, what we don't know, and how we are finding out.



A slice through a computer simulation of dust particles flowing onto a forming protoplanet (the bright dot).

News & Notes

2008 TVS Meeting Dates

The following lists the TVS meeting dates for the rest of the year. 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 December 19th deadline is for the December issue).

Lecture Meeting	Board Meeting	Prime Focus Deadline
Oct. 17	Oct. 20	Oct. 5
Nov. 21	Nov. 24	Nov. 9
Dec. 19	Dec. 22	Dec. 7

Money Matters

At the September board meeting, Treasurer **David Feindel** reported the TVS account balances as of September 24, 2008.

Checking	\$3,869.58	
CD #1	\$3,740.30	matures 11/17/08
CD #2	\$2,628.55	matures 11/27/08

Pleasanton Middle School Star Party - Nov. 1

Our initial star party date of October 4th ended up being canceled due to poor weather prospects (naturally, it cleared up that evening). Our tentative rescheduled date is for Saturday, November 1st. Clouds cancel. The school is located at 5001 Case Ave., Pleasanton, CA 94566. If you want to help out, please let Debi Mintz know by calling her cell: 925-858-8044.

Mountain House Star Party - Nov. 3

TVS will be providing the scopes for a star party in Mountain House (northwest of Tracy). We'll set up at a local park on the evening of Monday, November 3rd. Exact location and starting time will be announced once they're known. Clouds cancel.

TVS Elections

We're a month shy of the TVS elections and could really use some more member participation in club operations. Our President and Treasurer wouldn't mind passing the baton to another slate of officers. We also need a Secretary and Vice President, as we have neither at the moment.

Also, if anyone is interested in taking over the refreshments tasks, newsletter, school star party coordinator, or any number of other volunteer positions, just let any officer or board member know of your interest.

H2O Reminder

We've had multiple instances of the lock at the H2O gate being incorrectly locked. The lock needs to be hooked up in a daisy chain with the other lock (which is for PG&E),

otherwise the other lock can not open the gate. This has caused problems, as PG&E have not been able to gain access to their power lines.

If you are a keyholding member, and aren't not sure of the proper way to lock the gate, please contact our President and Observatory Director, Chuck Grant, to get the proper lock procedure.

A Stargazing Vacation

by Debbie Dyke

After my Barcroft trip last year, where my resting pulse rate rarely dropped under 110 beats per minute, I was a bit hesitant to return to Barcroft this year. It was unfortunate, as Barcroft has very dark skies, with such niceties as beds, showers, and even a cook that prepares breakfast and dinner for you.

There are various other star parties, like Golden State, Shingle Springs, and CalStar, that also have dark skies. But they're set up for tent camping—not exactly my cup of tea, as I much prefer warm soft beds, flush toilets, and hot showers.

So what options did I have for a dark sky star party location, with all the “plush” amenities, and with plenty of oxygen to keep me from being Medivac'd to the nearest hospital? I thought about it for a little bit, and started to consider a vacation home rental.

There are quite a few web sites that list vacation home rentals. Usually you can specify a region, or even a city, where you'd like to search for a home. Since my requirements were a bit more stringent than most people searching for a place to “get a way from it all”, I had to wade through lots of listings, trying to get an idea if the home shown had good sight lines, and was away from any street lights or light glows from nearby cities.

I had found five possible sites throughout California. Two were on the coast near Mendocino. Since fog was a very good possibility at that location, they were the first to get crossed off the list.

There was another site on the Trinity River, just west of Redding. Dark skies for sure, but after using Google Earth to scout out the area, I discovered that being right by the river meant the hills on either side went up rather steeply. So much for seeing a wide expanse of sky.

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Newsletter header image: The Milky Way

This wide angle shot of the Milky Way centers on the constellation Cassiopeia. Our galaxy is about 100,000 light years across, and contains 200-400 billion stars.

The image was taken near Mariposa using Kodak 400 ASA film, 50mm lens, f/1.7, 14 minute exposure. *Photo: Debbie Dyke*

Calendar of Events

October 24th, 7:00 p.m. to 11:00 p.m.

What: *Lunar Lounge: Costume Party*
Who: Everyone
Where: Chabot Space & Science Center
Cost: \$15 Adult, \$10 Student (with I.D.), \$8 Member. Get your tickets through the Box Office at 510-336-7373.

Who are you unmasked?

Wear your costume and party under the stars at Chabot. Enjoy a fun night of space adventures, star gazing, live music, microbrews from Buffalo Bill's Brewery, wine from R&B Cellars, food from the cash bar and much more!

Live Music Featuring Wave Array and The Bayliens.

8pm - 10pm Opening Act: Wave Array

Stretching the limits of alternative/indie rock into the psychedelic and experimental realms.

9pm - 11pm Headliner: The Bayliens featuring DJ True Justice

While the Bay Area can claim them now, the world is set to embrace the unique look and refreshing sounds of The Bayliens.

First 100 guests will receive complimentary Masquerade Masks! Get your tickets now!

October 25th, 11:00 a.m. to 5:00 p.m.

What: *Halloween Alien Adventure*
Who: Everyone
Where: Chabot Space & Science Center
Cost: Free with General Admission.

Join us for our Halloween Alien Adventure! Participate in

an Alien Autopsy or get to the bottom of the Area 51 Lab Investigation. Featuring hand made crafts, trick or treat stations and lots of glow-in-the-dark Alien Green Slime!

October 27, 7:30 p.m.

What: *Phoenix Mars Lander*
Who: Dr. Peter Smith (Univ. of Arizona)
Where: Jewish Community Center of S.F.
Cost: \$5

Peter Smith is the Principal Investigator for the Phoenix Mars Mission, and will be sharing the latest images from Phoenix's Surface Stereo Imager and Robotic Arm Camera as well as various geological findings from the Lander's "summer on Mars."

While the California Academy of Sciences has reopened, the fall Dean Series will still be held in the Kanbar Hall at the Jewish Community Center at 3200 California Street (at Presidio Avenue) in San Francisco.

Tickets are available online at www.calacademy.org/events/index.php or at the door. Parking is available across the street in the UCSF Laurel Heights campus parking lot or in the JCCSF garage. 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 stop four to five blocks away. Please e-mail any questions to deanseries@calacademy.org or call 415-321-8000.

NightFall 2008 Star Party - Oct 30 to Nov 2

NightFall takes place October 30 through November 2, 2008, at the Palm Canyon Resort in Borrego Springs, California. Nightfall is unique because it takes place at a

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Officers

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

Vice-President:
 unfilled

Treasurer:
 David Feindel
 feindel1@comcast.net

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 fatdawg@comcast.net

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 Debbie Dyke, Gert Gottschalk,
 Mike Rushford, John Swenson.

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 Chuck Grant

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Public Star Party Chair:

unfilled

Historian:
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Mentor:
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 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
trivalleystargazers@gmail.com

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*

desert resort that cooperates in creating a dark, red-light only environment throughout its sprawling property.

This is a great opportunity to bring family and friends to a star party with amenities such as pools, high-speed Internet access, and air conditioned rooms, as well as dark, steady skies. In the daytime, the nearby Anza Borrego Park is a terrific place for hiking or off-roading.

How to Attend: Nightfall is hosted by the Palm Canyon Resort. You can make reservations to stay there by going online, www.pcrsort.com, or calling 800-242-0044. Be sure to mention that you are with the “astronomy event.”

Special Note for RV'ers: Many people come to Nightfall in an RV, or bring a camper trailer. There is a large RV park at the resort with power, water and septic hook-ups, along with public restrooms and showers; reservations can be made through the resort.

For more information, including directions, map of the RV park, PDF flyer, preliminary activity schedule, etc., visit their web site: <http://rtmcastronomyexpo.org/nightfall.htm>. You may also e-mail the event committee at nightfall@jamiesongroup.com.

Astro Events

Jupiter Transits

The following are 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. We’re pretty much at the end of the Jupiter viewing season, with it setting around 10:30 at the beginning of the month, to 9:00 p.m. at the end of the month.

October

Tue 7	I Is GRS	na 7:22p 10:00p	7:12p 8:18p na	8:21p 9:33p na
Wed 8	GRS	na	7:38p	9:32p
Fri 10	GRS E Es	7:25p 7:34p 10:10p	9:06p 8:51p 11:15p	11:00p 10:19p na
Mon 13	GRS	na	6:40p	8:45p
Tue 14	Io Is	8:01p 9:18p	9:06p 10:11p	10:16p na
Wed 15	GRS	na	8:15p	10:20p
Fri 17	GRS E	8:00p 10:13p	10:00p na	na na
Mon 20	GRS	na	7:30p	9:30p
Tue 21	I	9:58p	na	na
Wed 22	GRS	7:15p	9:05p	na
Tue 27	GRS Cs	na 8:00 p	8:15p 9:42p	10:30p na
Wed 29	Gs GRS	7:45p 8:05p	9:00p 10:00p	na na
Thur 30	GRS I Is	na na 7:37p	na 7:30p 8:30p	7:52p 8:40p 9:50p

November

Mon 3	GRS	na	8:15p	
Tue 4	E Es	na 6:20p	na 7:23p	6:44p 9:03p
Wed 5	G GRS	6:06p 8:05p	7:43p na	na na
Thur 6	GRS I	na 7:25p	na 8:30p	7:45p na



	Is	8:32p	na	na
Sat 8	GRS	5:40p	7:15p	na
Mon 10	GRS	7:05p	na	na
Tue 11	GRS	na	na	6:50p
	E	6:45p	8:00p	na
Thur 13	GRS	na	6:30p	8:24p
Sat 15	I	na	na	6:09p
	Is	na	5:50p	7:10p
	GRS	6:20p	8:10p	na
Thur 20	GRS	na	7:15p	na
Sat 22	I	5:53p	6:53p	8:09p
	Is	6:50p	7:45p	na
	GRS	7:03p	na	na

News & Notes *continued*

My list was now narrowed down to two sites: one in Midpines, the other just north of Mariposa, both just east of Yosemite. The Midpines site was part way up a hill, on a secondary ridge, and had three bedrooms, two baths, and a hot tub. Great for when your autoguider is hard at work and you've got half an hour to kill while waiting to start your next exposure. The other site was ten minutes north of Mariposa in a valley, and had two bedrooms, 1-1/2 baths, and a small observatory with an 11-inch goto scope available for use.

After much consideration of the sight lines between the two places, the decision was made to go with the Mariposa site.

In the last few days of September four of us made our way to Mariposa, about a three hour drive away from the Bay Area. We set up our scopes near the observatory, as there were too many trees by the house.

The view from Glacier Point from the "theater" where the scopes are set up during the public star parties.

That first night we had to contend with passing high clouds. It was difficult to polar align, as Polaris kept disappearing on us. The second night was better, and the third night was the best. An added bonus was that the temperatures were fairly mild; mostly in the low 60s to upper 50s towards the early morning hours. A far cry from Barcroft, where the temperatures were in the low 30s to upper 20s.



Orion taken with a zoom lens at 75mm. Orion taken with the same zoom lens as it slid on down from 75mm to about 100mm.

I spent the first two nights working on the Messier list, drawing most of the objects I was seeing through the eyepiece. I have to admit that by 4:00 a.m., my eyes would start to glaze over, and the thought of drawing all those stars in M35 made me call it a night instead. The last night I decided to do some piggy back astrophotography. That's when you mount a camera on the back of your motor driven scope. It allows you to take wide angle shots of the night sky, while keeping the stars pinpoints. I didn't bother to guide my shots, so my images have curved stars around the edges of the photos. I also had a little issue with my zoom lens zooming without my knowledge.

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What's Up *by Debbie Dyke*

All times Pacific Daylight Saving Time.

October

- 6 Mon The Moon 4° from Jupiter. 9:00 p.m.
- 7 Tue **First Quarter Moon.** 2:04 a.m.
- 9 Thur The Moon 2.5° from Neptune. 11:00 p.m.
- 14 Tue **Full Moon.** 1:02 p.m.
1947 Chuck Yeager breaks the sound barrier in an X-1 rocket powered jet.
- 16 Thur Moon at perigee (225,570 miles). 11:00 p.m.
- 17 Fri The Moon occults the Pleiades (M45). 3:00 a.m.
Tri-Valley Stargazers general meeting. 7:30 p.m. at the Unitarian Universalist Church,
1893 N. Vasco Road, Livermore.
Mercury at perihelion.
- 19 Sun The Moon 3° from M35. 6:00 a.m.
- 20 Mon **Tri-Valley Stargazers Board meeting.** 7:30 p.m. at the Round Table Pizza in Livermore.
Orionid meteor shower peaks. 9:00 p.m.
- 21 Tue **Last Quarter Moon.** 4:55 a.m.
- 22 Wed Mercury at greatest elongation west (18°). 3:00 p.m.
4000 BC The world was created, according to James Ussher, archbishop of Ireland.
1975 Venera 9 becomes first spacecraft to return images of the surface of Venus.
- 24 Fri 3936 BC According to Johannes Hevelius, the world was created on this date at 6:00 p.m.
- 27 Mon Mercury at greatest heliocentric latitude north.
- 28 Tue **New Moon.** 4:14 p.m.
- 31 Fri **Halloween.**
1992 The Vatican absolves Galileo of all heresy charges.

All times Pacific Standard unless otherwise noted.

November

- 1 Sat Venus at aphelion.
Moon at apogee (251,548 miles). 10:00 p.m. PDT
- 2 Sun **Daylight Saving Time ends.** 2:00 a.m. Yea!
Neptune stationary. 11:00 p.m.
1917 First light for Mt. Wilson's 100-inch Hooker telescope.
- 3 Mon 1957 First dog in space (Laika). She is put to sleep 10 days later while still in orbit aboard Sputnik 2.
- 4 Tue S. Taurid meteor shower peaks. 8:00 p.m.
Election Day. Get out and vote—you can make a difference!
- 5 Wed **First Quarter Moon.** 8:03 pm.
- 7 Fri 1991 The 10-meter Keck Telescope dedicated on Mauna Kea, Hawai'i.
- 9 Sun 1934 Carl Sagan born.
- 11 Tue Veterans Day.
N. Taurid meteor shower peaks. 8:00 p.m.
1572 Tycho Brahe discovers a supernova in Cassiopeia. The remnant wasn't discovered until the 1960's.
- 12 Wed **Full Moon.** 10:17 p.m.
1782 John Goodricke discovers the variability of Algol.
1980 Voyager 1 flies by Saturn.

Extreme Starburst

by Dr. Tony Phillips

A star is born. A star is born. A star is born.

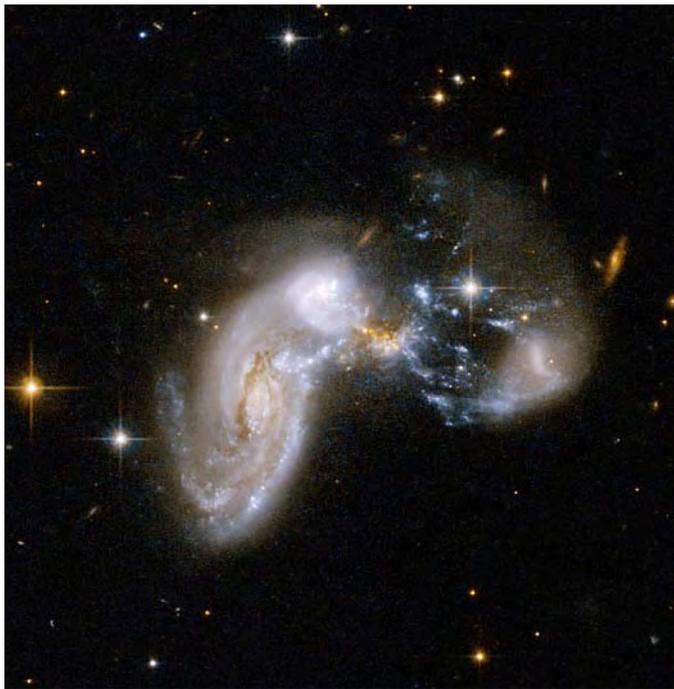
Repeat that phrase 4000 times and you start to get an idea what life is like in distant galaxy J100054+023436.

Astronomers using NASA's Spitzer Space Telescope and ground-based observatories have found that the galaxy gives birth to as many as 4000 stars a year. For comparison, in the same period of time the Milky Way produces only about 10. This makes J100054+023436 an extreme starburst galaxy.

"We call it the 'Baby Boom galaxy,'" says Peter Capak of NASA's Spitzer Science Center at the California Institute of Technology in Pasadena, CA. "It is undergoing a major baby boom, producing most of its stars all at once. If our human population was produced in a similar boom, then almost all people alive today would be the same age."

Capak is lead author of a paper entitled "Spectroscopic Confirmation of an Extreme Starburst at Redshift 4.547" detailing the discovery in the July 10th issue of *Astrophysical Journal Letters*.

The galaxy appears to be a merger, a "train wreck" of two or more galaxies crashing together. The crash is what produces the baby boom. Clouds of interstellar gas within the two galaxies press against one another and collapse to



The "Baby Boom" galaxy loosely resembles the galaxy shown here, called Zw II 96, in this Hubble Space Telescope image. This galaxy is only 500 million light-years away, while the Baby Boom galaxy is 12.3 billion light-years away.

form stars, dozens to hundreds at a time.

This isn't the first time astronomers have witnessed a galaxy producing so many stars. "There are some other extreme starburst galaxies in the local universe," says Capak. But the Baby Boom galaxy is special because it is not local. It lies about 12.3 billion light years from Earth, which means we are seeing it as it was 12.3 billion years ago. The universe itself is no older than 14 billion years, so this galaxy is just a youngster (Capak likens it to a 6-year-old human) previously thought to be incapable of such rapid-fire star production.

The Baby Boom galaxy poses a challenge to the Hierarchical Model of galaxy evolution favored by many astronomers. According to the Hierarchical Model, galaxies grow by merging; Add two small galaxies together, and you get a bigger galaxy. In the early years of the universe, all galaxies were small, and they produced correspondingly small bursts of star formation when they merged. "Yet in J100054+023436, we see an extreme starburst. The merging galaxies must be pretty large."

Capak and colleagues are busy looking for more Baby Boomers "to see if this is a one-off case or a common occurrence." The theory of evolution of galaxies hangs in the balance.

Meanwhile... A star is born. A star is born. A star is born. See more breathtaking Spitzer images at www.spitzer.caltech.edu/Media/mediainages. Kids can play the new Spitzer "Sign Here!" game at spaceplace.nasa.gov/en/kids/spitzer/signs.

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*

On one of the days we made a trip to Yosemite, an hour's drive from Mariposa. We had forgotten how majestic El Capitan was. We had brought binoculars and were able to make out nine or ten climbers as they made their way up different routes. We drove a little further in to the valley and took some photos of Half Dome. Then we headed up to Glacier Point. None of us had actually been there before, and I was curious what the site of our annual star party looked like. After a 45 minute drive, we made it to the Point. Wow, what a view! I can see why that star party is so popular.

Next year we're planning on getting a slightly larger group together to rent out a five bedroom, four bath home located on 200 acres in Angel's Camp. I think we've started a new tradition for those who like their creature comforts, dark skies, and plenty of oxygen.

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.