



# The Refractor

The Bulletin of the Eastbay Astronomical Society  
Founded in 1924 at Chabot Observatory, Oakland, California

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Number 08

June 2011

## June Joint CSSC/EAS Lecture

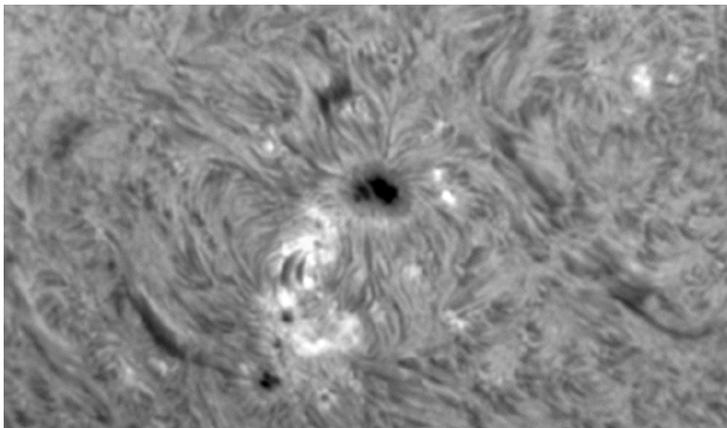
Title: **Earth-Size Planets and Intelligent Life in the Universe**

Speaker: **Geoff Marcy**

When: Tuesday, June 21st, 7:00pm  
Location: Kepler / Copernicus Rooms  
Chabot Space & Science Center

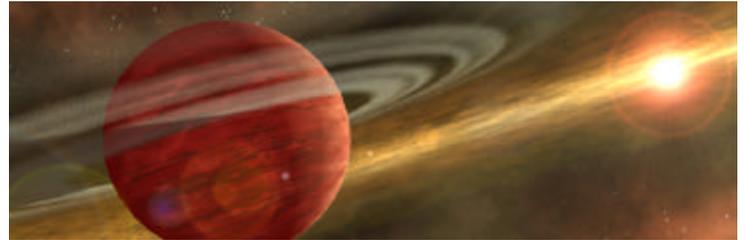
<< **NOTE SPECIAL DATE AND TIME** >>

Science fiction portrays our Milky Way Galaxy as filled with habitable planets populated by advanced civilizations engaged in interstellar trade and conflict. Back in our real universe, Earth-like planets and alien life have proved elusive. Has science fiction led us astray? NASA recently launched a new space-borne telescope, Kepler, dedicated to discovering the first Earth-like worlds around other stars. The first results are remarkable and profound. How common are worlds that are suitable for life? What properties render a planet livable? How common is life in the universe, especially intelligent life? New telescopic and biological observations are providing the first answers to these questions.



### See the Solar Chromosphere at Chabot!

Live video viewing of the sun in H-alpha & CaK light on the observing deck, every sunny Weekend. H-alpha photo by Jim Ferreira



Dr. Marcy is a Professor of Astronomy at UC Berkeley and an Adjunct Professor of Physics and Astronomy at San Francisco State University. He is the Director of Berkeley's "Center for Integrative Planetary Science", a research unit designed to study the formation, geophysics, chemistry and evolution of planets. He is an elected member of the National Academy of Sciences and has been the recipient of numerous awards, including the NASA Medal for Exceptional Scientific Achievement. He was named Discovery Magazine's Scientist of the Year in 2003. He was also co-recipient of the Prestigious Shaw Prize.



#### Research Projects:

Dr. Marcy is a leading astrophysicist in the detection and characterization of exoplanets. He and collaborators have discovered over 250 extrasolar planets, allowing ongoing study of their masses, radii, and orbits, including eccentricities and misalignments. His research team discovered the first multiple planet system (Upsilon Andromedae), the first Saturn-sized planet, and the first Neptune-size planet. He is a co-investigator with the NASA Kepler mission that recently announced 12300 exoplanets, most being smaller than twice the size of Earth. *Kepler-10b* has a radius only 1.4 times that of Earth. His current research focuses on finding other Earth-size planets and solar systems similar to our own. Ongoing work is designed to study the sizes, occurrence frequency, chemical composition, and the orbits of Earth-size planets.

**DINNER WITH THE SPEAKER**  
*Not Scheduled*  
**Hunan Yuan**  
4100 Redwood Rd.  
(next to Safeway)  
No need to confirm,  
Just show up!

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## WANTED: PHOTOS OF OLD CHABOT

Do you have photographs of the Mountain Boulevard Chabot Observatory? If you do, pick out the best of the best and send a scanned image to the Newsletter editor. A new image will be posted in the newsletter each month.

### FUTURE CONJUNCTIONS—2011

Jun 21 General Meeting, Chabot, Physics Lab, 7:30pm  
 9 Board Meeting, Chabot, Soda Room, 7:30pm  
 5 EAS MOVN, 7pm-10pm, Wightman Plaza  
 Jul 16 General Meeting, Chabot, Physics Lab, 7:30pm  
 14 Board Meeting, Chabot, Soda Room, 7:30pm  
 --- EAS MOVN, 7pm-10pm, Wightman Plaza

For questions or if you are uncertain about the weather, call (925)926-0853 before 6pm, or check Chabot's weather page at <http://www.chabot.space.org/forms/weather.aspx>

**EAS Loaner Scope Program** has telescopes available for rental by EAS members. Scopes include 60mm and 80mm refractors, a C-90, two 10 inch Dobsonians, and ; 4 and 8 inch Schmidt-Cassegrains. Scope rental is \$15 a month, with a \$50 deposit. For information, contact Ray Wong by E-mail at [qm7@yahoo.com](mailto:qm7@yahoo.com)

**EAS Library:** Hours, 3:00pm - 7:00pm every Friday, and immediately after monthly EAS lecture meetings. The library is located on the second floor of the Dellums Building, down the hall next to the interactive lunar lander exhibit.

Volunteer librarians are needed to expand library hours. **We are particularly interested in any member having experience with book cataloging software.** If you'd like to help contact EAS president Barry Leska at [b.leska@comcast.net](mailto:b.leska@comcast.net)

## Chabot Space & Science Center Invites EAS Members to Volunteer with Us!

- Share your knowledge of and passion for astronomy with thousands of CSSC visitors
- Experience the unique opportunity to operate Chabot's historical telescopes
- Share your own telescope at Chabot\*
- Inspire young astronomers and future scientists by assisting students in our astronomy education programs

**Explore these opportunities And find out about our next Volunteer Orientation!**

<http://www.chabot.space.org/adult-volunteers.htm>

*\*EAS members who are only interested in sharing their own telescope at Chabot (not a full volunteer commitment) are required to attend a volunteer orientation. After completion, you may join us on deck and share your own telescope any Friday or Saturday night! Chabot Volunteers must make the regular volunteer commitment and pursue official placement through the Volunteer Manager.*

## On the Web

### Lick Observatory Collection Project

[http://collections.ucolick.org/archives\\_on\\_line/exhibits.html](http://collections.ucolick.org/archives_on_line/exhibits.html)

The University of California's Lick Observatory has been in operation on the 4200-foot summit of Mount Hamilton, east of San Jose, California, since 1888. The observatory is an active center of astronomical research with a long and notable history. Over the years a wealth of material illustrating the growth of astronomy since the observatory's founding accumulated on Mount Hamilton. Much of that legacy has been preserved in the Mary Lea Shane Archive of the University of California Santa Cruz's Special Collections, but many important artifacts pertaining to the observatory's scientific life, remain on the mountain.

The Historical Collections Project was begun in late 2008 to preserve those artifacts and make them accessible. Cataloging the collection of *Scientific Objects*—the hardware used in all types of observatory work, including complete instruments, separate components, measuring devices, photographic apparatus, and so on—is the Project's first goal. Cataloging is ongoing and many items remain to be recorded. Those that have been can be found on this web-



site using the search and browse tools. New items become available as soon as they are added.



The Project is also concerned with

two other collections, distinct from but related to the scientific objects. These are *Publications and Manuscripts*, consisting largely of Lick Observatory publications and the handwritten log books of Lick astronomers, and *Photographic Plates*, mainly comprising spectrograms and direct images from all Lick programs, instruments, and telescopes of the photographic era. Parts of these collections will become available here as they are cataloged. See "About" for more on the Historical Collections Project.



### "Where Bill Gates' Great-Granddaughter Might Go on Her Honeymoon: The Top Tourist Sights of the Solar System"

An illustrated nontechnical public lecture by astronomer *Andrew Fraknoi*

Wednesday, June 29, 1 - 2 p.m.

Lawrence Hall of Science, University of California, Berkeley

Astronomer and popular lecturer Andrew Fraknoi will explore the most intriguing future tourist destinations among the planets and moons in our cosmic neighborhood, including the 4,000 mile lava channel on Venus, the towering Mount Olympus volcano on Mars (three times the height of Mount Everest), and the awesome Verona Cliffs on the moon Miranda (which are the tallest "lover's leap" in the solar system). The talk will be illustrated with close-up images from the robot probes that are exploring these alien worlds.

Fraknoi is the Chair of the Astronomy Department at Foothill College and the former Executive Director of the Astronomical Society of the Pacific. He was selected as the 2007 California Professor of the Year and is the winner of the Gemant Prize of the American Institute of Physics for bringing science to the public. He appears regularly on several Bay Area radio stations, explaining astronomical developments in everyday language. The International Astronomical Union has named Asteroid 4859 Asteroid Fraknoi in recognition of his work in science education.

No advanced tickets; the lecture is free, but you must pay regular admission to the Lawrence Hall of Science. Buy admission tickets by calling 510-642-5132. Tickets: \$12 Adults (ages 19-61), \$9 Students/seniors/disabled (ages 7-18 or 62+), Free for members.

For directions to the Hall, see:

<http://www.lawrencehallofscience.org/visit/info>

### Are We Alone?: Results about Planets Elsewhere from the Kepler Mission

-- A Panel Discussion --

Date: June 30, 2011 Time: 7:00-9:30 pm

Place: Lawrence Hall of Science, University of California, Berkeley

Free and open to the public. Seating is first-come, first served.

Once humanity realized that every star is a Sun like our own, we naturally wondered whether these other stars also have planets. And could those planets be earth-like enough to be .... [continue: Are We Alone? Page 4]

[Continue: Are We Alone?] ...homes to more or less intelligent beings like ourselves? Astronomers have only known about planets elsewhere for the last 15 years and finding other Earths is a challenge we are only now able to address. Today, NASA 's Kepler mission is discovering thousands of planets orbiting other stars and for the first time finding strong hints that other Earths (and not just other Jupiters and Saturns) really exist. This non-technical seminar features a panel of key investigators from the NASA Kepler Mission Science Team, who will share the latest mission discoveries, hints about what we might learn in the coming year, and their insights into the age-old question "Are we alone?"

Panelists:

- **Bill Borucki**, Principal Investigator, NASA Kepler Mission, Ames Research Center, Mountain View, CA
- **Natalie Batalha**, Co-Investigator and Deputy Science Team Lead for the NASA Kepler Mission, Professor of Physics and Astronomy at San Jose State University, and lead author for the discovery of the first nearly Earth-size rocky planet.
- **Gibor Basri**, Co-Investigator for NASA Kepler Mission and professor in the Department of Astronomy at University of California, Berkeley
- Moderator: **Andrew Fraknoi**, Astronomical Society of the Pacific, and Chair of Astronomy Department at Foot-hill College, Los Altos Hills, CA

*"Astronomers have cracked the Milky Way like a piñata, and planets are now pouring out so fast that they do not know what to do with them all."* -- Dennis Overbye, New York Times, Feb. 2, 2011

## Lava Beds National Monument Astronomy Day

First let me introduce myself, I'm Carolyn Hunt a Park Ranger at Lava Beds National Monument, your information was found on astronomy club websites. This year Lava Beds National Monument is piloting it's first annual Astronomy Day and Night Sky Event on July 2nd, 2011. Lava Beds National Monument is located in far Northern California [www.nps.gov/labe](http://www.nps.gov/labe). I will be organizing the event. The afternoon/evening will feature a few astronomy/night sky activities/talks, an evening program and finally a chance to look through our two (basic) telescopes. In order to make this event a greater success we are hoping to interest night sky aficionado into attending this event to participate in our activities and see our dark skies in all their glory. ... [continue next column]

If you are interested in more information please let me know and I will e-mail you an event flyer.

I would like to include this event as well as the opportunity to volunteer, in your newsletter if possible.

If you would be willing to volunteer to provide the public with varied telescopes and/or your invaluable expertise please give me a call at 530-667-8114.

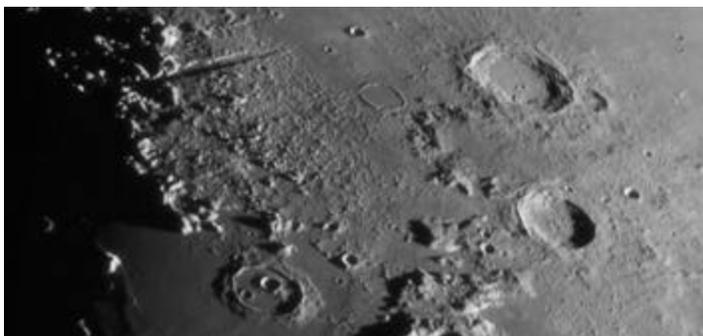
A word on our amazing viewing conditions! Lava Beds National Monument is in the high desert and because of this we frequently have many uninterrupted nights of



beautiful viewing conditions thanks to few clouds, low humidity and high altitude (4,987 feet). Check out our clear-sky forecast at [http://cleardarksky.com/csk/prov/California\\_charts.html](http://cleardarksky.com/csk/prov/California_charts.html). During my use of this site I've found this to be very accurate at least as far as cloud cover goes. We have approximately magnitude 6.5 skies with main light interference from local communities in the north. However, to the south there is wonderful Modoc National Forest with few lights of any kind. Our monument is also working on becoming a dark sky park and to this end have installed many high efficiency, low glare lights. To learn more about this exciting event give me a call at 530-667-8114 or email me.

Maybe you've heard of us or maybe you haven't and will discover another dark sky alcove to view the night sky in all it's majesty!

Carolyn Hunt  
Park Guide, Interpretation  
1 Indian Well Headquarters, Tulelake, CA 96134  
Visitor Center: 530-667-8113 Office: 530-667-8114





## News & Views

Howdy Astro Fans,

Rumor has it summer has been cancelled. Can you believe this weather? I've lived in the Bay Area almost my whole life, and I've never ever seen rain and cold in May or June. I only remember very rarely seeing it in March. I'm flabbergasted.

Last month, our Prez Barry Leska, Treasurer Rich Ozer, myself, and new CSSC Snr Engineering and Facilities Manager Richard Turner, went to visit the basement of the old Mountain Blvd Chabot Observatory (yes, it's still there!) We wanted to see the large workshop equipment stored there which we will someday figure out how to get it all refurbished and working, again. There's a lathe, a vertical band saw, mill, and drill press - all large, heavy duty, and industrial grade. We've talked about the possibility of loaning it

all to someone with a shop, where we would have access to it. Ideally, we would set up a machine shop at Chabot; maybe someday.

I have to say: it was a real trip down memory lane for me, visiting the old site. I could just see Don Stone in the Starry Night Gift Shop, selling everything from candy bars and sodas, to mirror blanks and tools for the Telescope Makers' Workshop. You had to stick a metal bar into a hole at the inside-base of Leah's



dome, and manually shove it to make the rotation. Or wheeling the giant ladder around Rachel's pier for the viewing public - oh, wait. We still do that. Somethings never change. (That's not completely true, of course. Even the weather changes.)

Thanks to the diligent efforts and technical expertise of EAS members Terry Galloway, Rich Ozer, and Jim Ferreira, Chabot has a very new and very cool solar telescope. It is designed to not only be self-contained and easy to move, on it's rolling tripod w/ equatorial mount, it is capable of transmitting the images of the sun into the Center, so the public can see a real-time H-alpha image of prominences, flares, and spots. This is hot stuff, and when it is finally and fully activated, public solar [continue next page]



[News & Views continue]

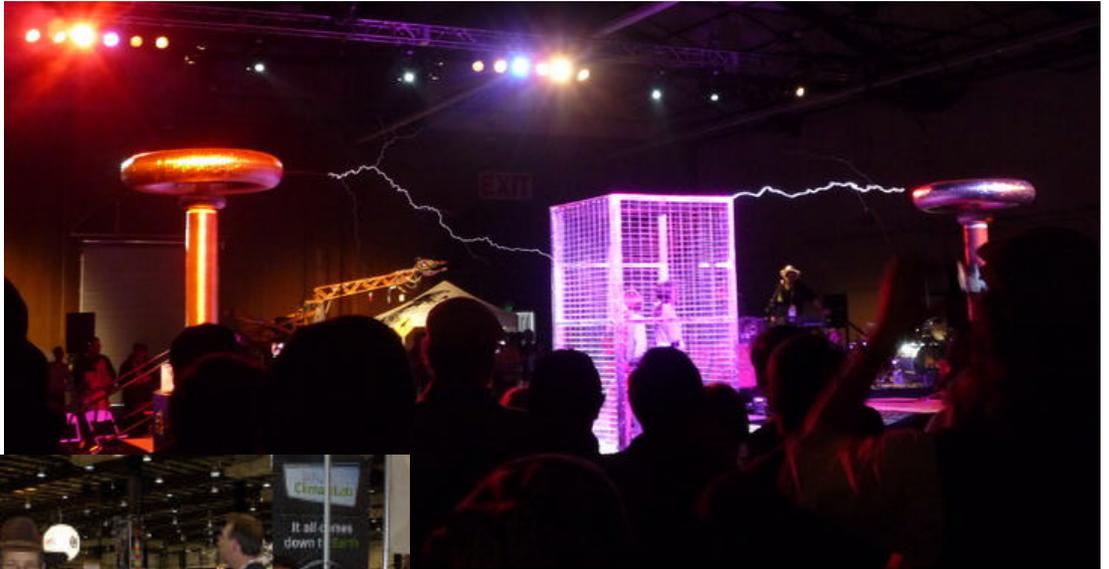
enlightenment shall be forthcoming.

Finally, the annual Makers' Fair was held the weekend of 5/21-22, and CSSC and the EAS TMW were there promoting the making of nextgen's geniuses, and of course, telescopes. It's always fun to attend these things; you see a lot of cool, wacky, innovative stuff. One of my favorites, though, is the giant twin Tesla coils playing out tunes while they're

out tunes while they're casting lightning bolts about as though they were the whips of the gods. Very cool.

Cheerios! <crunch, crunch!>

;~Don



Above, EAS Members **Dave Barossa**, **Rich Ozer**, and **Alan Roche** show 'n tell telescope making at The Makers' Fair at the San Mateo Convention Center. Upper right photo, the twin Tesla coils can't quite hit the kids inside that protective Faraday cage.

**SolarRoverOne** (SRO) is a self contained solar telescope system. Seeing that the CSSC solar scopes were poorly mounted and inconvenient to use, the EAS acquired a Celestron CGEM mount, placed it on a Scope-Buggy and equipped it with batteries to run mount, video camera and monitor. The CSSC/EAS jointly operated SRO utilizes a Coronado SolarMax 70 H-alpha telescope and Coronado PST Calcium-K telescope. The SRO can be rolled out, set up and operational in minutes. A video cable from the north end of the observing deck carries the video feed to the plasma screen in Rachel's Dome.





# Eastbay Astronomical Society

At Chabot Space & Science Center  
10000 Skyline Boulevard • Oakland, CA 94619

**June 2011**

*RETURN SERVICE REQUESTED*

## Eastbay Astronomical Society

President: Barry Leska b.leska@comcast.net

Treas: Richard Ozer (510) 532-5477 rozer@pacbell.net

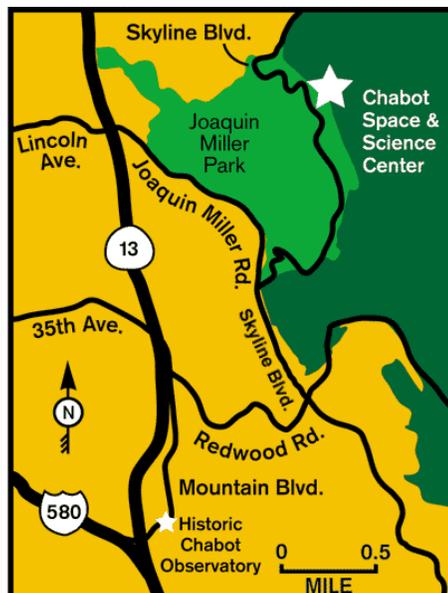
Secretary: Linda Lazzaretti (510) 633-2488

Articles and photos for *The Refractor* are encouraged. Deadline for the July, 2011 issue is July 1, 2011. Items may be submitted by snail-mail or E-mail to: Editor - Jim Ferreira, 753 Oriole Avenue, Livermore CA 94551 bakerst@comcast.net (925) 449-0107

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Events Coord: Gene Weber (925) 963-1165 gene.weber@gmail.com



### FUTURE CONJUNCTIONS

- June 11** General Meeting, Chabot, Physics Lab, 7:30pm  
**9** Board Meeting, Chabot, Soda Room, 7:30pm  
**5** EAS MOVN, 7pm-10pm, Wightman Plaza  
**July 16** General Meeting, Chabot, Physics Lab, 7:30pm  
**14** Board Meeting, Chabot, Soda Room, 7:30pm  
**---** EAS MOVN, 7pm-10pm, Wightman Plaza

### Join the Eastbay Astronomical Society

- Regular, \$24/year  Family, \$36/year
- Contributing, \$40/year  Student, \$15/year (digital news-letter, only)
- Sustaining, \$60/year or more

Contact: Richard Ozer, EAS Treasurer  
Phone: (510) 532-5477 Email: rozer@pacbell.net

Sign up online at <http://www.eastbayastro.org/>