



The Refractor

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

Volume 86
 Number 11

August 2010

August EAS Lecture Meeting

Title: **Dark Influences: Black Holes and their Impact on Galaxies**

Speaker: **Nicholas McConnell, University of California, Berkeley**

When: Saturday, August 28, 7:30pm

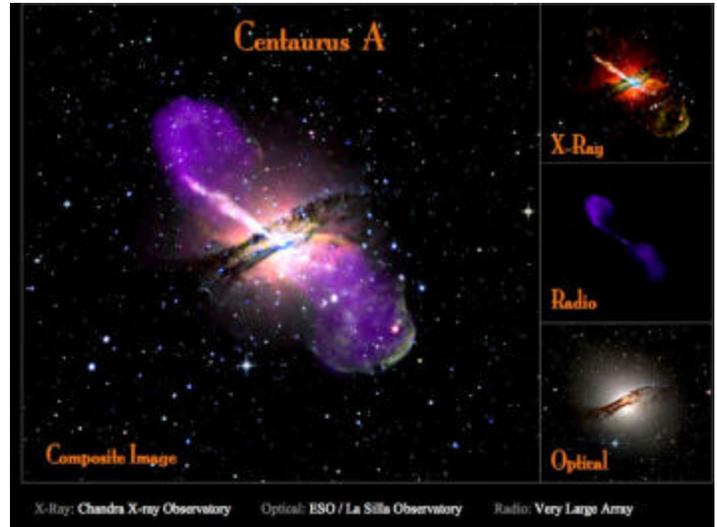
Location: Physics Lab, 2nd Floor, Dellums Building, Chabot Space & Science Center

Black holes embody gravity at its most extreme, and are among the most powerful objects in the Universe. With masses exceeding millions of stars, the largest black holes can play a profound role in shaping and coloring the galaxies in which they reside. Surprisingly, these effects do not require the galaxy to yield to the black hole's inward gravitational pull. Instead, the changes come from tremendous amounts of energy and momentum that are expelled when black holes messily consume raw fuel. Black hole outbursts can blow jets and cavities through vast regions of gas, and may be capable of shutting down star formation throughout a galaxy.

Nearly every large galaxy hosts a central, supermassive black hole. The masses of known supermassive black holes have been shown to correlate with several properties of their host galaxies, providing strong evidence that galaxy and black hole growth are co-dependent. Yet crucial questions remain unanswered. How did the first black holes form? How did galaxies and black holes grow billions of years ago, versus today? How do different environments affect galaxy and black hole evolution? To help answer these questions, astronomers are extending black hole searches to increasingly diverse populations of galaxies.

Invariably, black hole detections have come from observations

of the black holes' immediate surroundings. Black hole indicators include glowing gas, swarms of moving stars, and individual

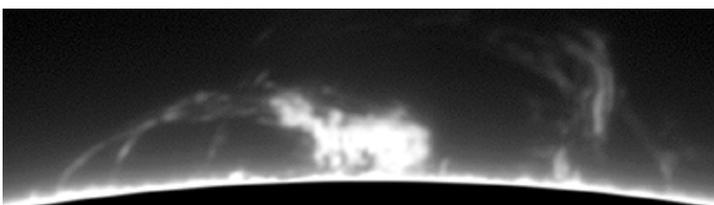


objects in orbit. Searches for the smallest, largest, and most distant black holes continue to bring forth new detection methods to overcome existing challenges. Thanks to ingenuity and ample effort, the future looks quite bright for studies of the Universe's darkest inhabitants.

Nicholas McConnell is a Ph.D. candidate in Astrophysics at UC Berkeley. His research specializes in detecting and "weighing" the largest black holes in the Universe. Nicholas uses the Keck telescopes in Hawaii to investigate the central regions



of the largest known galaxies, looking for signatures of black holes more than one billion times as massive as the Sun. These extreme host galaxies are dominant members in galaxy clusters, and precise measurements of their central black holes can help astronomers understand the evolution of galaxy clusters as a whole. In addition to hunting black holes, Nicholas has surveyed nebulae in the Milky Way in search of newborn star clusters. (cont. page 2)



See Solar Prominences at Chabot!

Spectacular live video of the sun in H-alpha on the giant plasma screen in Rachel's Dome, every sunny Weekend.

Active solar prominence photo by Jim Ferreira

DINNER WITH THE SPEAKER
 5:30, Sat, Aug.28
Hunan Yuan
 4100 Redwood Rd.
 (next to Safeway)
 No need to confirm,
 Just show up!

Inside this issue:

- Global Cool page 2
- SETIcon page 3
- PATs page 3
- Easter Island Eclipse-Minor page 4
- Telescope Makers Workshop page 2

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 at (510) 796-5748 or 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, if you'd like to help contact EAS president Barry Leska at leska@comcast.net



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—2010

- Aug 28 EAS General Meeting, Chabot, Physics Lab, 7:30pm
- 12 Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 15 EAS MOVN
- Sep 25 EAS General Meeting, Chabot, Physics Lab, 7:30pm
- 9 Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 12 EAS MOVN
- Oct 23 EAS General Meeting, Chabot, Physics Lab, 7:30pm
- 14 Board Meeting, Chabot, Soda Board Rm, 7:30pm
- 17 EAS MOVN

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.chabotspace.org/forms/weather.aspx>

(Cont.) August Speaker: Nicholas McConnell

He earned his B.A. at Boston University in 2006, where he helped build an instrument for a sub-orbital rocket mission.

Nicholas is passionate about advancing widespread scientific literacy, and helping students with diverse backgrounds pursue lifelong careers in science. He has co-designed and co-taught inquiry-based science activities for undergraduate students at UC Santa Cruz, Maui Community College in Hawaii, and Hartnell College in Salinas, CA. He is eager to find more ways to share the wonder, critical thinking, collaboration, and confidence that accompany scientific exploration.

Global Cool

Join international leaders, green visionaries and citizen scientists for one Earth-changing celebration - **Global Cool: A Gala Benefit for Planet Earth**. Saturday, November 13, 2010. Featuring Bill Nye's Climate Lab exhibition premiere, exclusive fundraising event for an intimate 325 guests honors brilliance, innovation and accomplishment in education and sustainability.



Chabot Space & Science Center is creating a global standard amongst institutions: Bill Nye's Climate Lab is making climate science accessible, integrative, and dynamic. In short: cool. Experience the premier exhibition unveiling, entertainment, views of the cosmos, and more all under the auspices of cooling our favorite planet (Earth).

For Details: www.chabotspace.org/globalcool

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 at our next Volunteer Orientation!

For upcoming orientation dates, or for more information, please contact us at: volunteers@chabotspace.org or, call our Volunteer Manager Megan Gray at (510) 336-7414

**EAS members who are only interested in sharing their own telescope at Chabot are required to attend a Chabot volunteer orientation and complete a self-guided training worksheet entitled "Getting to know Chabot." After completion, you may join us on deck and share your own telescope any Friday or Saturday night!*

***Full Chabot Volunteers must make the regular volunteer commitment and pursue official placement through the Volunteer Manager.*

SETIcon. August 13-15, 2010

Report by Linda Lazzeretti, EAS Secretary

Upon entering the elegant Santa Clara Hyatt Regency looking for the SETIcon registration, I ran into the famous Seth Shostak, SETI Institute Senior Astronomer and radio host. He directed me to the right place and I proceeded from there to my first workshop “Giant Worlds and Icy Moons.”

Once seated, I looked over and saw Jill Tarter of “Contact” fame sitting a few seats over. I got up to get a drink of water, glanced down at the flyer by the water cooler and saw the Chabot logo in bold print at the top. It was an invitation to a “Stellar Event” there in Sept. with the even more famous Alex Filippenko who was also presenting at SETIcon. This was fast becoming a ‘star-studded’ exploration in all ways!

I stayed put in the room for the next topic “Looking for a Few Good Earths” and listened to our own Gibor Basri’s Kepler Mission colleagues. They followed up on Gibor’s



The Allen Telescope Array (ATA), Hat Creek Radio Observatory, California

recent EAS Annual Dinner lecture sharing visuals of some 700+ planet candidates with longer orbits that might be similar to Earth, complete with sounds from HAT-P7b in the constellation Cygnus. Jeff Marci is a co-investigator on this mission as well and exo-planet research will be featured at the Sept. 26th Chabot event.

Proceeding on to more ‘stars’, I took a seat in the ballroom to listen to the legendary radio astronomer Frank Drake. He talked of early days at the Greenbank National Observatory, his long friendship with Carl Segan and proofing the first Contact drafts for factual accuracy, ET possibilities with “M” stars, the Drake Equation’s “L” factor on Earth, IQ and altruism, ‘rogue’ planets, habitable rings in the Milky Way and finally theological implication and souls! Dr. Drake was honored at the conference celebrating his 80th birthday – a true pioneer who deserves much honoring...hint, next year’s speaker at our annual EAS dinner?

Jill Tarter, Director of the SETI Institute, followed on Frank’s heels in more ways than one, he being her trusty mentor and colleague, as she spoke of carrying the mantle forward here and around the planet. The Hat Creek Allen Telescope Array, a collaborative venture between UCB

and SETI, now has 42 telescopes looking at a quarter million stars including sun-like ones, 100 closest ones, exoplanet systems and Kepler candidates. Jill also gave us a peek into the making of the movie “Contact”, its flaws (earphones, walkie-talkies, incorrect calculations) and perks (Jody Foster’s inspired role modeling for women astronomers and Carl Segan’s enormous legacy for us all).

Finally, some bad news...no ‘touch trips’ allowed, the last workshop of the day, a “Send the Robots” panel discussion in the same room where I started this fascinating SETIcon exploration. Well, not so bad after all, as the panel concluded to send the robots for basic science and humans for basic common sense.

Pacific Astronomy and Telescope Show

September 18-19, 2010,
Pasadena Convention Center,
Pasadena, California



Admission: \$20 per day. Information on purchasing tickets at www.rtmcastronomyexpo.org/PATS.htm

Product Demonstrations and Workshops

Outreach Event: Saturday night telescope viewing at the Paseo Colorado mall, just north of the conference center.

Mt. Wilson Tour and Observing

Astrometry Workshop: Brian Warner workshop on “Measuring the Universe.”

Riverside AstroImaging Workshop: Friday, Sept., 17th.

Tentative Speakers / Activities Schedule:

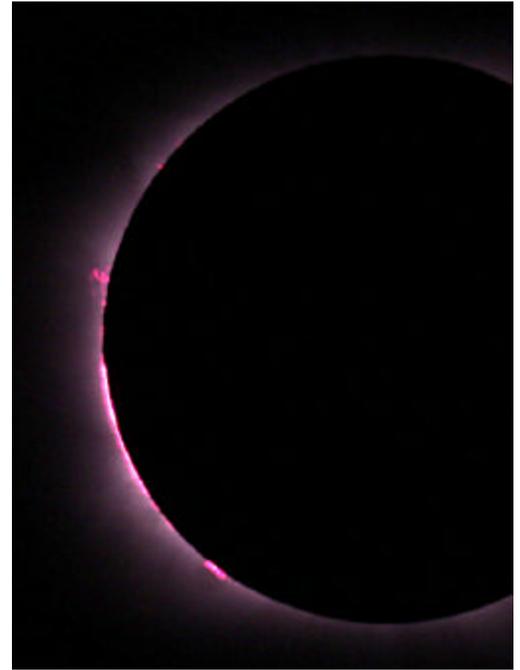
Saturday:

- Alex Filippenko
- Bob Naeye
- Wolfgang Promper, Courtesy FLI
- Gary Palmer, Courtesy OPT
- Brian Warner, “Measuring the Universe”
- Bryan Cogdell “AstroImaging Introduction
- Tour / Observing at Mount Wilson
- Outreach Star Party at Paseo Colorado Mall

Sunday:

- Dave Doody
- Dave Jurasevich
- David Crawford
- Geoff Marcy

More in the works!



Easter Island Totality - Photography by Robert Minor

Experienced eclipse chaser, EAS member Robert Minor traveled to the south pacific to capture the July 11 event. You may recall that Robert photographed the 2009 total eclipse from the deck of a cruise ship near Iwo Jima. Photo at left shows coronal streamers during totality which lasted over four and one half minutes. At right is a shorter exposure close up during totality revealing a crimson prominence. Robert reported that when they arrived on the island eclipse morning, it was still raining and there was a 50/50 chance of rain clouds obscuring the event. Shortly before totality skies cleared allowing Robert and his wife Jeanie to experience and record this most magical event.



TELESCOPE MAKERS WORKSHOP



TELESCOPE MAKING is still alive and well at Chabot Space & Science center! Under the leadership of EAS Richard Ozer and a highly dedicated, talented volunteer staff, EAS members and general public visitors can get the nitty-gritty on mirror grinding, polishing and testing, along with help in telescope design.

The Telescope Makers Workshop (TMW) meets every Friday evening in the Physics Lab, 2nd floor, Dellums Building (same location as the monthly lectures). Entrance for TMW is the back door adjacent to the Building-1 loading dock. You can also gain entrance through the CSSC front entrance by telling the ticketing folks you're there for TMW. For information on TMW contact Richard Ozer at rozer@packbell.net.



Eastbay Astronomical Society

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

August 2010
RETURN SERVICE REQUESTED

Eastbay Astronomical Society

President: Barry Leska leska@comcast.net

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

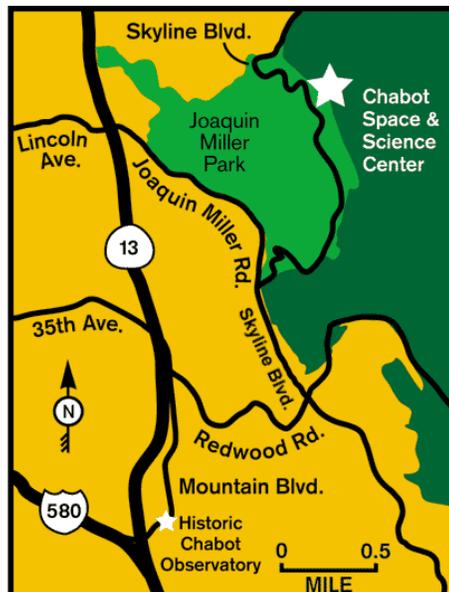
Secretary: Linda Lazzaretti (510) 633-2488

Articles and photos for *The Refractor* are encouraged. Deadline for the September 2010 issue is September 10, 2010. Items may be submitted by mail or E-mail to: Editor - Jim Ferreira, 753 Oriole Avenue, Livermore CA 94551 bakerst@comcast.net (925) 449-0107

Vice President: Ray Wong (510) 796-5748 qm7@yahoo.com

Membership Reg: Bruce Skelly EastbayAstro@gmail.com

Events Coord: Dave Rodrigues (510) 483-9191



FUTURE CONJUNCTIONS

- | | | |
|-------------|-----------|---|
| Aug | 28 | General Meeting, Chabot, Physics Lab, 7:30pm |
| | 12 | Board Meeting, Chabot, Soda Room, 7:30pm |
| | 15 | EAS MOVN*, 7pm-10pm, Wightman Plaza |
| Sept | 25 | General Meeting, Chabot, Physics Lab, 7:30pm |
| | 9 | Board Meeting, Chabot, Soda Room, 7:30pm |
| | 12 | EAS MOVN*, 7pm-10pm, Wightman Plaza |
| Oct | 23 | General Meeting, Chabot, Physics Lab, 7:30pm |
| | 14 | Board Meeting, Chabot, Soda Room, 7:30pm |
| | 17 | 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: Gerald McKeegan, EAS Treasurer

Tele: (925) 926-0853 Email: geraldspace@earthlink.net

Mail: 1760 1st Ave, Walnut Creek, CA 94597-2561

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