

SONOMA SKIES

December 2015 E-Newsletter of the
[Sonoma County Astronomical Society](#)



501(c)(3) Scientific and Charitable Organization



Hello members and friend,

We had a great ‘Popcorn & Movie Night’ last month featuring the recent PBS release ‘CHASING PLUTO’. It’s always fun to see our guests and members come in anxious to see our programs and share their enthusiasm with each other. I want to take just a moment to remind all of our members that SCAS is a family friendly club. Although some speakers and topics may be a little bit “up there” for some, we all do have a very good time learning and visiting.

Don’t hesitate to share your experience with your friends who are always welcome to visit. All our meetings are completely free of charge. Your donations to the coffee and snack table are greatly appreciated.

Thank you all for your participation both up front at meetings and behind the scenes, in the field, and at home. Please feel free to approach any of the SCAS members or Board Members anytime. We are here to share and help.

Jim DeManche

Vice President/Program Director

Next SCAS General Meeting

Wednesday December 9, 2015

7:30pm – 9:30pm

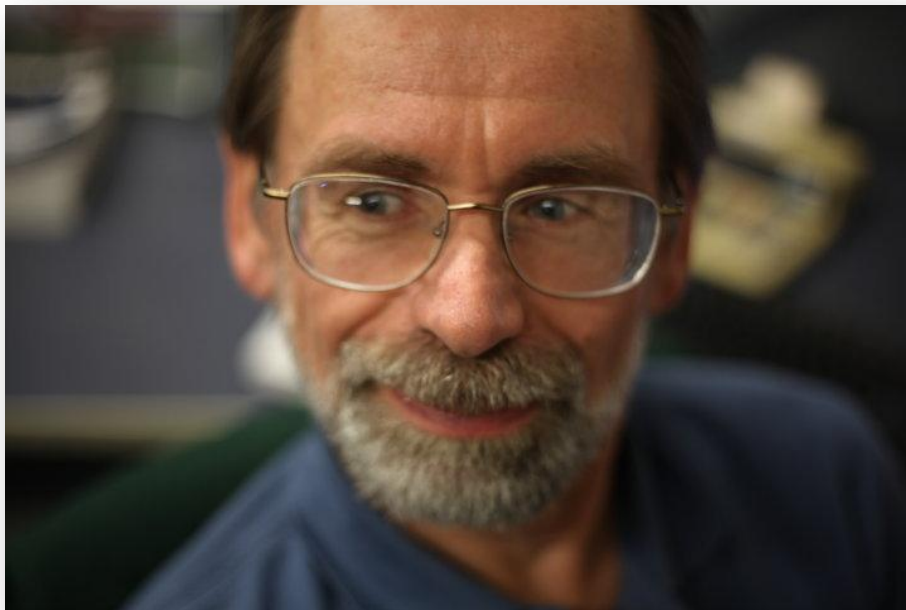
Location:

Proctor Terrace Elementary School

1711 Bryden Lane, Santa Rosa

Guest Speaker for December

John Whitehouse



Our very own John Whitehouse will be sharing his personal visit and impressions from the Lick Observatory with us. John is a long time member of SCAS, former President and Vice President. His time and advice on many topics has been priceless to those who know him, and will get to meet him. John is an avid astronomer and private pilot as well. He and his wife just completed a cross country road trip to many destinations across several states. We're glad they're both home safe and sound.

Evenings Program Schedule

Meeting begins at 7:30PM

SCAS BOARD ELECTIONS - 2016

Coffee & Conversation 8:00PM

Guest Speaker ~ John Whitehouse 8:15PM

Meeting concludes at 9:00PM



Lick Observatory prior to the 1906 Earthquake

This article is provided by NASA Space Place.

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Our Solar System Is *Almost* Normal, But Not Quite

by Ethan Siegel

It was just over 20 years ago that the very first exoplanet was found and confirmed to be orbiting a star not so different from our own sun. Fast forward to the present day, and the stellar wobble method, wherein the gravitational tug of a planet perturbs a star's motion, has been surpassed in success by the transit method, wherein a planet transits across the disk of its parent star, blocking a portion of its light in a periodic fashion. Thanks to these methods and NASA's Kepler spacecraft, we've identified many thousands of candidate planets, with nearly 2,000 of them having been confirmed, and their masses and densities measured.

The gas giants found in our solar system actually turn out to be remarkably typical: Jupiter-mass planets are very common, with less-massive and more-massive giants both extremely common. Saturn—the least dense world in our solar system—is actually of a fairly typical density for a gas giant world. It turns out that there are many planets out there with Saturn's density or less. The rocky worlds are a little harder to quantify, because our methods and missions are much better at finding higher-mass planets than low-mass ones. Nevertheless, the lowest mass planets found are comparable to Earth and Venus, and range from just as dense to slightly less dense. We also find that we fall right into the middle of the "bell curve" for how old planetary systems are: we're definitely typical in that regard.

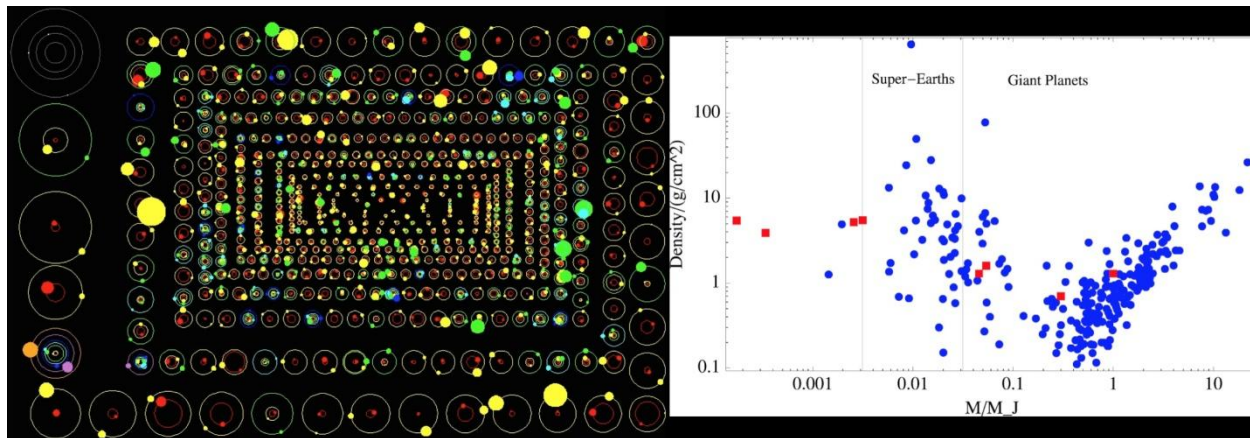
But there are a few big surprises, which is to say there are three major ways our solar system is an outlier among the planets we've observed:

- All our solar system's planets are significantly farther out than the average

distance for exoplanets around their stars. More than half of the planets we've discovered are closer to their star than Mercury is to ours, which might be a selection effect (closer planets are easier to find), but it might indicate a way our star is unusual: being devoid of very close-in planets.

- All eight of our solar system's planets' orbits are highly circular, with even the eccentric Mars and Mercury only having a few percent deviation from a perfect circle. But most exoplanets have significant eccentricities, which could indicate something unusual about us.
- And finally, one of the most common classes of exoplanet—a super-Earth or mini-Neptune, with 1.5-to-10 times the mass of Earth—is completely missing from our solar system.

Until we develop the technology to probe for lower-mass planets at even greater distances around other star systems, we won't truly know for certain how unusual we really are!



Images credit: NASA / Kepler Dan Fabricky (L), of a selection of the known Kepler exoplanets; Rebecca G. Martin and Mario Livio (2015) ApJ 810, 105 (R), of 287 confirmed exoplanets relative to our eight solar system planets.