

Skywatchers

Newsletter of the China Lake Astronomical Society

Volume 49 No. 01

January 1, 2012

NEXT MEETING 7:30 p.m., Monday, January 9, 2012

Maturango Museum, 100 East Las Flores Avenue, Ridgecrest, California

PROGRAM FOR THE JANUARY 9 MEETING – “RECENT RESULTS FROM THE KEPLER SPACE TELESCOPE”

This month's meeting will deal with findings of the much-acclaimed Kepler Telescope, the solar-orbiting spacecraft dedicated to the search for extrasolar planets. Launched in 2009 and designed for a 3-1/2 year mission, this extremely productive instrument has already detected over 2300 candidate planets orbiting stars in the Cygnus-Lyra region of the Milky Way (see news item on page 3). Bruce Churchill will present a talk about the most recent results from Kepler.

DATES TO KEEP IN MIND

Monday, January 9, 2012: Regular CLAS Meeting at the Maturango Museum, 7:30 p.m.

Monday, January 23, 2012: Deadline for next Skywatchers Newsletter.

Monday, February 6, 2012: Regular CLAS Meeting at the Maturango Museum, 7:30 p.m.

Star Parties will resume in March 2012

IMPORTANT ANNOUNCEMENT - 2012 ROYAL ASTRONOMICAL SOCIETY HANDBOOKS AND CALENDARS ARE AVAILABLE

For many years, the China Lake Astronomical Society has provided the RASC Observer's Handbook to our membership. The retail price for a single copy (delivered) is \$34.95 US. We get them at a group rate, and share the savings with our members. If you buy in person from CLAS, we are charging \$20.00 for the handbook, and \$12.00 for the calendar. Calendar and Handbook will be sold together for the combined price of \$30.00. These are the same prices as last year.

Most of you know all about the handbooks and calendars. Suffice to say that the *Observer's Handbook* is well over 360 pages of astronomical data, presented as tables, charts and annual and daily information. The *Calendar* presents useful information, along with great astronomical photographs.

The publications will be available at the January meeting. If you do not get one at the meeting, contact Carroll Evans at 760-375-5681 or Roger Brower at 760-375-1181 to pick up a copy.

THE ANNUAL ELECTION OF OFFICERS WAS HELD AT THE DECEMBER MEETING

All officers will continue for (at least) one more year.

THE SKY IN JANUARY by Roger Brower

1. Jupiter remains a fine object most of the night before it sets later in the night. Look for it in the southeast at dusk on the border of Aries and Pisces.
2. Mars remains in Leo this month. Look for it rising in the east around 10 PM at the start of the month and 8:30 PM at the end of the month.
3. Saturn rises near Spica at about 1:30 AM at the start of the month and 11:30 PM at the end of the month. Look for them in the southeast after they rise.
4. Mercury will barely be visible the first week of the month. Look for it rising in the east-southeast just before sunrise.
5. As Jupiter shines in the east Venus shines in the west in the evening sky this month. It can be seen in the southwest after sunset.
6. Comet Garradd remains in the constellation of Hercules and is expected to be about 6th Magnitude in January. Look for it about two binocular fields to the upper right of Vega.
7. The Quadrantid meteor shower peaks on morning of January 4th.
8. Also look for the remains of Comet Lovejoy below Scorpio.

PARTS OF DOOMED RUSSIAN MARS PROBE TO HIT EARTH IN JANUARY

By Leonard David, [SPACE.com](http://www.space.com) Space Insider Columnist

Date: 27 December 2011

Russia's marooned Mars probe Phobos-Grunt, currently stuck in orbit, is headed for a mid-January plunge into Earth's atmosphere, and more than two dozen pieces of the huge spacecraft could survive the fall, scientists say. Current re-entry forecasts have the Phobos-Grunt spacecraft falling Jan. 14 or 15, plus or minus five days, according to space junk expert Heiner Klinkrad.

Klinkrad, head of the space debris office at the European Space Agency's space operations center in Darmstadt, Germany, said Russian scientists are hard at work assessing the re-entry survivability of Phobos-Grunt, a spacecraft that tips the scale at nearly 14 tons. "They assume that about 20 to 30 fragments will reach ground with an overall mass of less than 200 kilograms," some 400 pounds of leftover hardware, he said.

Phobos-Grunt launched into space Nov. 8 (Nov. 9 in Moscow), but failed to transfer to an interplanetary trajectory. Its mission was to land on Phobos, one of two moons circling the Red Planet, snare samples and rocket them back to Earth in 2014.

Attached to Phobos-Grunt is China's Mars orbiter, Yinghou 1, which is now also destined for a destructive re-entry next month.

More information and the latest updates can be found at:

<http://www.space.com/14056-doomed-mars-probe-phobos-grunt-falling-debris.html>

FIRST EARTH –SIZED PLANETS FOUND BY KEPLER

The two planets, dubbed Kepler-20e and 20f, are the smallest planets found to date. They have diameters of 6,900 miles and 8,200 miles — 0.87 times Earth (slightly smaller than Venus) and 1.03 times Earth. These worlds are expected to have rocky compositions, so their masses should be less than 1.7 and 3 times Earth's.

Both worlds circle Kepler-20: a G8 yellow star a little less hot than the Sun and located 950 light-years from Earth [where we see it shining at only magnitude 12.5]. Kepler-20e orbits it every 6.1 days at a distance of 4.7 million miles. Kepler-20f orbits every 19.6 days at a distance of 10.3 million miles. Due to their tight orbits, they are heated to temperatures of 1,400° Fahrenheit and 800° F.

In addition to the two Earth-sized worlds, the Kepler-20 system contains three larger planets. All five have orbits closer than Mercury in our solar system.

They also show an unexpected arrangement. In our solar system small, rocky worlds orbit close to the Sun, and large, gas-giant worlds orbit farther out. In contrast, the planets of Kepler-20 are organized in alternating size: big, little, big, little, big.

“We were surprised to find this system of flip-flopping planets,” said co-author David Charbonneau of the CfA. “It’s very different than our solar system.”

The three largest planets are designated Kepler-20b, 20c, and 20d [with 9, 16, and less than 20 Earth masses, respectively].

The planets of Kepler-20 could not have formed in their current locations. Instead, they must have formed farther from their star and then migrated inward, probably through interactions with the disk of material from which they all formed. This allowed the worlds to maintain their regular spacing despite alternating sizes.

Kepler identifies “objects of interest” by looking for stars that dim slightly, which can occur when a planet crosses the star’s face. To confirm a transiting planet, astronomers look for the star to wobble as it is gravitationally tugged by its orbiting companion (a method known as radial velocity).

The radial velocity signal for planets weighing one to a few Earth masses is too small to detect with current technology. Therefore, other techniques must be used to validate that an object of interest is truly a planet.

More information about this discovery and how such sightings are confirmed can be found here:

<http://www.skyandtelescope.com/news/Kepler-Team-Confirms-Two-Hot-Earths-Hundreds-More-Await-135865388.html>

NEW INSIGHT INTO THE BAR IN THE CENTER OF THE MILKY WAY

(No, not THAT kind of bar, Star Wars fans!)

Research now indicates that our galaxy’s central bar developed from a massive rotating disk of stars.

By NOAO, Tucson, Arizona — Published: December 20, 2011

Article on new research can be found at:

<http://www.astronomy.com/en/News-Observing/News/2011/12/New%20insight%20into%20the%20bar%20in%20the%20center%20of%20the%20Milky%20Way.aspx>

ASTRONOMY ONLINE: NASA’s biggest discoveries for 2011

http://www.huffingtonpost.com/2011/12/22/nasa-biggest-discoveries-2011_n_1166071.html

MEMBERSHIP INFORMATION

Basic CLAS dues are \$20.00 per year, which includes the Skywatchers Newsletter. As a benefit of membership, you may also receive Astronomy Magazine and/or Sky and Telescope Magazine. The fee schedule is as follows:

Basic membership	\$20.00 per year
Membership with Astronomy magazine	\$54.00 per year
Membership with Sky and Telescope magazine	\$53.00 per year
Membership with both S & T and Astronomy	\$87.00 per year

Send your check to: Roger Brower, Treasurer, China Lake Astronomical Society, P.O. Box 1783, Ridgecrest, CA 93556.

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WESTERN AMATEUR ASTRONOMERS WEB SITE <http://www.waa.av.org/>

Meetings of the China Lake Astronomical Society are held at the Maturango Museum at 7:30 p.m. on the first Monday evening of each month, except when the first Monday is a holiday.

**SKYWATCHERS, Newsletter of the
CHINA LAKE ASTRONOMICAL SOCIETY
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FIRST CLASS

NEXT MEETING: 7:30 p.m., JANUARY 9, 2012 – “RECENT RESULTS FROM THE KEPLER SPACE TELESCOPE” AT THE MATURANGO MUSEUM, 100 EAST LAS FLORES AVE., RIDGECREST, CALIFORNIA

CLAS WEB PAGE <http://www.chinalakeastrosoc.org>

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