

YOUNG ASTRONOMERS NEWSLETTER

P. 1

KEEPING AN EYE ON ASTEROID 2012 TC4

On October 12, asteroid 2012 TC4 will zip by the Earth at the “interesting” distance of about 30,000 miles. The asteroid was first discovered during its flyby in 2012, but astronomers lost track of it until this summer. It was observed anew by the Very Large Telescope of the European Southern Observatory in Chile.

The asteroid is roughly 20 meters in diameter, which is about the same size as the object that flamed over Chelyabinsk, Russia in February, 2013. Trackers are confident that TC4 will pass Earth at a safe distance. Let’s hope so. [Wikipedia, The Live Sky].

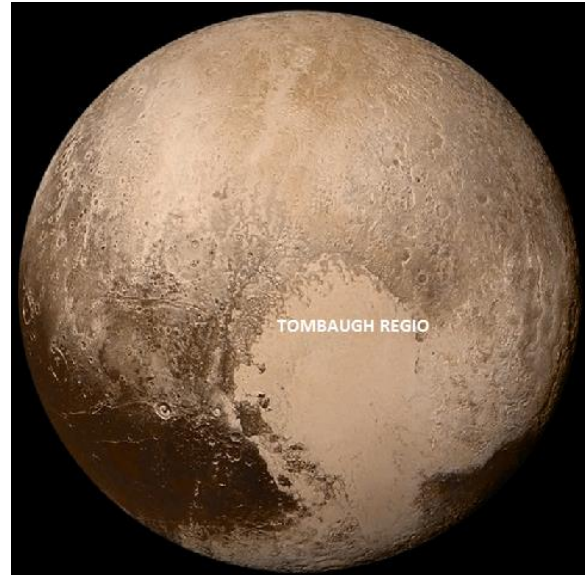
LONG LIVE CASSINI!

Cassini, the wonderful, unprecedented planetary mission to Saturn took its planned plunge into the atmosphere of the ringed planet, to end a twenty-year scientific adventure that will keep astronomers poring over its findings for many decades to come. We said our “goodbyes” to this marvelous craft on September 15. Volumes are filled with its photos and data. [See video summary of the mission at: New York Times, September 8 “Cassini’s Grand Finale on Saturn”]

NAMING THE SURFACE FEATURES ON PLUTO

The heart-shaped geological feature on Pluto has been named by the International Astronomical Union as: Tombaugh Regio, and one crater on the dwarf planet is now called Burney Crater. Clyde Tombaugh, an American astronomer, discovered Pluto in 1930 and a British school girl, Venetia Burney, suggested the name, Pluto. Pluto was designated as a

dwarf planet in 2006. It was explored from space in 2015 by the planetary probe, New Horizons.



PLUTO (NASA PHOTO)

TUG OF WAR AMONG JUPITER’S MOONS

Even the early studies by Galileo in the 1600’s indicated that there was a rhythmic dance between the Jovian moons, Io, Europa and Ganymede. Galileo’s plots of the moons’ positions showed that Europa and Io ended up on the side of Jupiter exactly opposite from Europa and Ganymede. More modern studies have shown that there is a 1:2:4 resonance frequency among the three moons.

This forces the moons to follow slightly eccentric orbits, which, in turn, causes the bodies to flex slightly due to the strength of Jupiter’s gravity. This geological motion results in frictional warming of the bodies. [Astronomy, October, 2017].

POPULATION OF BLACK HOLES IN GALAXIES AND THE CHANCE OF COLLISIONS

It is estimated that there are about 100 million black holes in the Milky Way. That's out of more than 100 billion stars total in our home galaxy. So, what is the chance that two large black holes can collide to produce gravity waves?

A team at the University of California, Irvine has calculated that there are at least 10 million black holes of sufficient size to produce a gravity wave signal if they should collide. The wave should be detectable by LIGO, the Advanced Laser Interferometer Gravitational-Wave Observatory. [Sci. News, Sept. 16, 2017].

KINDS OF COSMIC DUST

In the October issue of Astronomy magazine (Ask Astro section) there is described the three types of dust that can exist in space. They are intergalactic dust clouds located in the area between galaxies, interstellar dust, located between stars within a galaxy and interplanetary dust which one finds in planetary systems, like our Solar System. Intergalactic and interstellar dust is rich in silica and carbon, in various forms (silicon carbide, graphite and simple organic compounds).

Interplanetary dust is more complex. It can contain some of the same particles found between galaxies and stars, as well as unique materials that arise from special interaction between and within planetary bodies.

PLANET X: STILL LOOKING

The search continues for Planet X, the possible ninth planet in our Solar System. Maybe it should be called Planet IX. Dr. Scott Sheppard of the Carnegie Institution For Science describes in the October issue of Sky and Telescope the early studies and future efforts to locate the elusive planet.

As early as 2012, there were indications that some large body was interacting with distant Kuiper belt objects, described as extreme objects. These objects have orbits that are wildly tilted out of the Solar System plane.

Simulations show that the unknown body must lie beyond a couple of hundred astronomical distances (Sun – Earth distance) and be larger than a few Earth masses in order to have so much influence on these outer objects. Sheppard has 90% confidence that Planet X exists. So, the search is intensifying.

Since the Hubble telescope has too small a field of view, Sheppard as well as Michael Brown and Konstantin Batygin (first published advocates of a ninth planet) of Caltech are using instruments with broader viewing areas, such as Japan's Subaru telescope in Hawaii, the Dark Energy telescope in Chile and the Magellan Baade telescope, also in Chile.

The current estimate of Planet X's location centers on the Orion – Eridanus region of the sky. It is currently in its aphelion (most distant point from the Sun) and has a magnitude around 23 to 25.

KEPLER CATALOG

What is likely the final entry into the Kepler catalog of exoplanets revealed 219 additional candidates to bring the total to 4,034. The total of Earth-sized, habitable zone planets stands at about 50 [Sky & Tel., Oct. 2017].

HURRICANE MARIA DAMAGES THE ARECIBO OBSERVATORY IN PUERTO RICO

At this writing (9/23/17), emergency crews have not reached the Arecibo radio telescope in Puerto Rico. One of the staff members was able to communicate to the outside world that the telescope is still standing, but it has sustained some damage to its antenna and dish due to the high winds of Hurricane Maria.

[Space.Com]

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OCTOBER BIRTHDAYS: **Ejner Hertzsprung** (Danish), b. Oct. 8, 1873; d. Oct. 21, 1967. Quantified the relationship of star luminosity and size and temperature. With Russell, created the Hertzsprung – Russell diagram. **Henry Norris Russell** (Amer.), b. Oct. 25, 1877; d. Feb. 18, 1967. Worked out the relationship of star luminosity and temperature. With Hertzsprung, created the Hertzsprung-Russell diagram. **Subrahmanyan Chandrasekhar** (Ind.), b. Oct. 19, 1910; d. Aug. 21, 1995. Astrophysicist. Explained the dynamics around black holes. Nobel Prize 1983. **Karl Guth Jansky** (Amer.), b. Oct. 22, 1905; d. Feb. 14, 1950. A pioneer in radio astronomy. Detected radio waves originating from the center of the Milky Way galaxy. **Karl Schwarzschild** (Ger.), b. Oct. 9, 1873; d. May 11, 1916. Mathematician-astronomer. Developed theories about existence of black holes and dynamics around black holes.

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MOON PHASES IN OCTOBER: Full: Thurs. the 5th; Last Qtr.: Thurs. the 12th; New: Thurs. the 19th; First Qtr: Fri. the 27th.

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PLANETS IN OCTOBER: **Mercury:** visible low in the west 30 min. after sunset. **Jupiter:** dropping low in the western horizon but maintains a magnitude of minus 1, until it drops below the horizon by the end of the first week. **Saturn:** in the southwest among the background stars of Ophiuchus. It dips lower as the month progresses. The rings are ideally tilted for viewing by earthlings. **Venus and Mars:** These two planets greet us in the east before sunrise. Venus (mag. -3.9) rises 13 minutes before Mars (mag. 1.8). The gap between the two planets closes to just 0.2° on the 5th.

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THE ORIONID METEROR SHOWER: The Orionids may be glimpsed anytime between Oct. 2 and Nov. 7, but the peak is supposed to occur around the 20th of Oct. We will have cooperation from a dark new moon.

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See the Fall sky chart in the September issue of YAN.

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ASTRO FACTS:

If you were on the Moon during a lunar eclipse and looked at the Earth, you would not see the Sun. You would be experiencing a solar eclipse!

If you viewed the Solar System from a distance, you would see that most of the planets orbit the Sun in a more or less flat plane. Five of the planets orbit the Sun within three degrees of Earth’s plane. New Horizons, the probe that flew past Pluto in 2015, took nine and a half years to reach the dwarf planet. And, that is with its ultra-travelling speed of 40,000 miles an hour. At that rate, it would take New Horizons 74,000 years to reach the nearest star, Proxima Centauri.



Hmm! That was good! I hope they send me another Italian Meal

Forsyth Astronomical Society website: <http://www.fas37.org> **Kaleideum phone:** 336-767-6730

Have a great October! Bob Patsiga, editor

Ext. 1000