

Greg Smith – editor

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Program: 125th Anniversary of Lowell Observatory and 90th of the Discovery of Pluto

**Meeting: February 19, 2020
Mark Morris LGIC**

Dim Betelgeuse



I took this picture on Feb. 3, 2020. It was one of two nights we had after a six(?) week stretch of cloudy nights. Betelgeuse is in the upper left of the photo. It is no brighter than Bellatrix to the right. Betelgeuse should be as

bright as Rigel in the lower right

I found that the dimming of Betelgeuse was as dramatic as all the reports said. I was personally surprised by how much dimmer it looked. The reports on Feb 3, said it had dimmed a full magnitude; from .6 to 1.6.

So, are we about to witness an event in the night sky that has not occurred in about 500 years or is this just the confluence of two known dimming cycles? The last historic supernova was when Tyco Brahe was mapping the skies. This is known as Tyco’s supernova of 1572 (SN1572). This supernova in 1572 disproved Aristotle’s teaching of the unchangeability of the stars. It was one of the first steps in undermining the concept

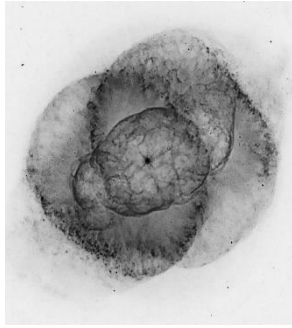
that the Earth was the center of the Solar System / Universe.

SN1572 was in the constellation of Cassiopeia and is visible now only in very large telescopes. It was visible for months after its November discovery. With Betelgeuse being only about 700 light years away rather than SN1572 being some 6500 light years away, we will probably view it longer than just a few months. Astronomers conjecture that it will be as bright as the moon, giving shadows at night. If the supernova happens in the spring, we will see it during the day, even through the summer.

It is assured that it will make the news big time. Literally, this will be the astronomical event of the century. A manned landing on Mars may get more media attention, publicity and planetary science, but the astronomical science of Betelgeuse going supernova will be as big as a manned mission to Mars.

On a personal note: I took the picture as a single frame at 10 seconds, F4.8, 35mm, ISO 1600. I did use photo software to brighten it up so it would be visible on the printed page and cropped to center Orion. The lighter part of the sky is Longview light pollution.

*Every Day is a Star Filled Day,
Every Night is a Starry Night*



A New Neighbor?



Is there a 2nd planet orbiting Proxima Centauri?

Posted by Paul Scott Anderson in SPACE | **January 27, 2020**

Proxima Centauri, the closest star to our sun, may have a second planet, according to researchers from the National Institute of Astrophysics. If confirmed, it would be an ideal candidate for direct imaging by new upcoming space telescopes.

In 2016, astronomers announced the discovery of an exoplanet orbiting the closest star to our solar system, Proxima Centauri. Exciting, since the planet appeared to be close to the same size as Earth and not too far away, cosmically-speaking, at 4.2 light-years. Could there be other planets in this nearby system? On January 15, 2020, another research team published its evidence for a second, larger planet orbiting Proxima Centauri. At this point, this second object is still considered a candidate. It is not confirmed. But researchers do make a compelling case for its existence.

The potential discovery was announced by Mario Damasso of the National Institute of Astrophysics and his colleagues on January 15. The new peer-reviewed paper appeared in *Science Advances* on the same day.

The planet – dubbed Proxima Centauri c – is a fair bit larger than the first planet, Proxima Centauri b, and is about six times more massive than Earth. This would make it a super-Earth, planets that are significantly larger and more massive than Earth but smaller and less massive than Neptune. It is estimated to orbit its star every 5.2 years. Proxima Centauri b, by comparison, is only about 1.3 times Earth's mass.

Even though Proxima Centauri is the closest star, part of the Alpha Centauri three-star system, it has been difficult to detect planets orbiting it. That's because most exoplanets discovered so far have been glimpsed via the transit method; that is, they're detected because they lie edge-on to our line-of-sight to their host stars, and astronomers can detect a minute dip in the host star's light when the planet crosses in front of it. No such dip in brightness has been seen for Proxima Centauri.

Instead, to find this star's planets, astronomers have had to use a second planet-hunting technique, called the radial velocity method. Radial velocity refers to a slight wobble in the star's motion as seen from Earth, caused by the gravity of unseen planets tugging on it. This is how Proxima Centauri b was found, and now, seemingly, Proxima Centauri c.

Two European Southern Observatory (ESO) telescope instruments, the High Accuracy Radial velocity Planet Searcher (HARPS) and the Ultraviolet and Visual Echelle Spectrograph (UVES), were used to obtain the data from Proxima Centauri.

Damasso and his team analyzed the star's light spectrum data, going back 17.5 years, to see if a previously reported light spectrum signal really was from a second planet. If the spectrum oscillates between the red and blue radial velocity, that typically means the star is moving slightly closer to and then farther away from Earth, due to the gravitational pull of a planet or planets. The researchers did find such a signal, occurring over a 1,900-day period. That would mean it is unlikely to be due only to other

cyclical shifts in the star's magnetic field. It would be more consistent with a second planet orbiting the star.

So, could either of these planets be habitable?

At this point, we just don't know enough about them to answer that question. Proxima Centauri b is almost the same size as Earth, and is thought to have similar temperatures, but it orbits very close to its star, which is a red dwarf. Red dwarfs are known for being very active, emitting powerful solar flares. The radiation from those flares could strip away the atmosphere of any close-in planets. Proxima Centauri c is farther out but may be too cold for life as we know it. It also may be more like Neptune, with a deep gaseous atmosphere and no real solid surface, rather than a super-Earth, which is rocky like Earth, but larger. We just don't know yet.

Another exciting aspect of Proxima Centauri c, however, is that it is far enough from the glare of its star that it should be able to be photographed directly by upcoming space telescopes. So far, only a handful of planets that are much larger than this have been successfully photographed, and even then, they are still just blobs of light.

From the paper:

Proxima c could become a prime target for follow-up and characterization with next-generation direct imaging instrumentation due to the large maximum angular separation of ~1 arc second from the parent star. The candidate planet represents a challenge for the models of super-Earth formation and evolution.

If scientists can learn more about both Proxima Centauri c and b, including direct imaging for at least c (b would be a lot more difficult), then that should give them a better idea of what both Earth-sized and super-Earth exoplanets are actually like, in particular ones that orbit red dwarf stars. That would then help them figure how many could be potentially habitable, and what conditions would make that possible, an exciting endeavor.

Bottom line: Researchers from the National Institute of Astrophysics have found new evidence for a second planet orbiting Proxima Centauri, the closest star to our sun.

Minutes of the January Meeting

Mark Thorsen, Vice President, welcomed everyone. He introduced the officers. He thanked Chuck Ring and Shannon Ripp for snacks and drinks. He also thanked Greg Smith for the newsletter.



Solstice Walk Sponsors:

Back Row: Howard Knytych, Sue Piper, Heather Gawlick,
Bruce McCredie, Dennis Buck
Judges Front Row: Maren Ripp, Ava Ripp, Noel Ripp;

Patricia Ayerza was our guest speaker. She is the Vocational Rehab Counselor from Scappoose. She talked to us about their relationship between Rose City Astronomers and their sister club GAMA in Mendoza, Argentina. Her husband talked about the upcoming solar eclipse in December in Argentina.

Roy Gawlick talked about the Solstice Walk at the Lake that took place in December. We had great participation. About 300-400 people showed up. Next year the walk will be Saturday December 19th. The actual solstice is on Monday December 21st. Roy then introduced the judges, Ava, Noel, and Marin Ripp. The gave out the awards for the walk. Prizes went to Most Friendly Hosts: Earth, Most Facts: Mars, Best Decorations: Pluto, Best Creativity: Saturn, and the Grand Prize went to Neptune. All the sponsors did a

great job and it was hard to decide awards.

Mark gave the Sky Report. Venus is in the evening sky and appears a little higher above the horizon with each passing night. Venus is the brightest object in the night sky other than the moon. Mercury also returns to the evening sky. It offers the best viewing in February. Mars, Jupiter, and Saturn have returned to the morning sky. Mars could be easy to mistake for Antares because of their proximity and color.

Tonight, is the last call for RCA calendars. Any that are left will be sent back.

Our insurance policy is due. Steve Powell made a motion to renew the policy given it was not raised substantially. Shannon Ripp 2nd the motion. Motion passed.

Chuck has a signup sheet for snacks.

Last month's minutes were approved as published.

Meeting adjourned.

February 2020 Meeting

DATE: Wednesday February 19

TIME 7:00 PM

**PLACE: Mark Morris High School
LGIC**

**PROGRAM: - 125th Anniversary of Lowell
Observatory and 90th of the Discovery of Pluto**

Drinks – Steve Powell
Snacks – Ripp Family

**Remember: Earth Day
Saturday April 18, 2020**

Friends of Galileo Club Officers

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Next Month's Newsletter Deadline

The deadline for items in next month's newsletter is:

**Wednesday: seven days
before next meeting.**

**Please feel free to send in your
thoughts and experiences about
your astronomical adventure.**

Submit your material by E-mail to:

gryth@msn.com

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