



Photo credit: Mario Alejandro Torres

THE OBSERVER

January/February 2023

Vol. 21

SAVE THE DATE! Annual Member Meeting and Board Elections are Coming

The 2023 Annual Member Meeting will be held on Wednesday, January 11 at 7 pm at the Ritchie Observatory. All members are invited and welcome to attend either in person or via Zoom. More information will be forthcoming. Board elections will take place at this meeting. All six of the current Board members are nominated to continue. There are three open positions: Vice President, Secretary, and Education Officer. If you'd like to consider nominating yourself or someone else, please contact President Frank Petrie, president@bpaastro.org, to learn more about the available positions.

2nd Saturday Program

Spectroscopy: What It Is and How It's Used for Astronomy

Prof. Steven Neil Shore of the University of Pisa, Italy

Saturday, January 14, 6:30 PM

Dr Shore will explain this technique that is so essential to astronomy and astrophysics. He'll also describe how amateur astronomers can practice spectroscopy with our own backyard telescopes, what equipment we'll need, and how we can contribute to scientific research using spectroscopy. Attend in person or on Zoom, details at BPAstro.org/events.

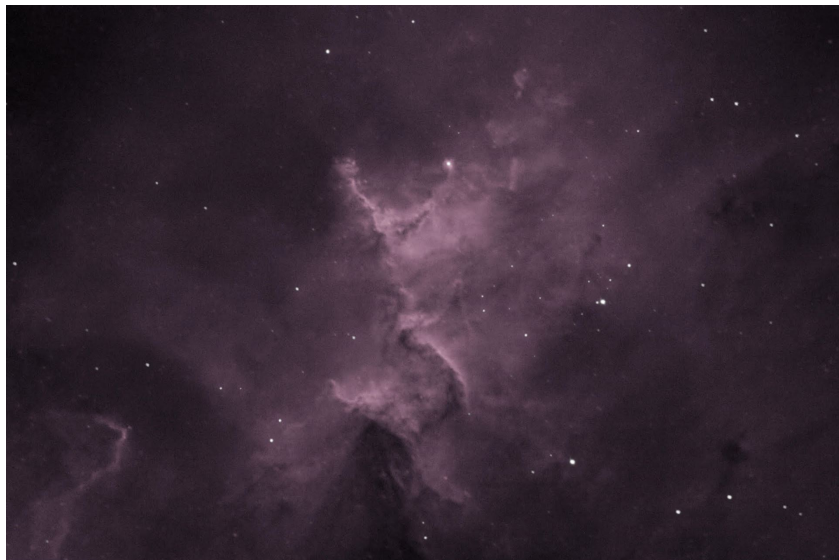
Planetarium Projector Soon to Arrive!

We don't know the exact date, but we anticipate sometime before the next newsletter. Once we have it, we'll start a crash course to learn how to operate it. At first, we'll run the pre-installed programs, and eventually we'll be able to create our own. We'll provide training for members who would like to become presenters for our soon-to-be expanding schedule of daytime and evening planetarium shows for both kids and adults. Contact Steve Ruhl at science@bpaastro.org.

Ritchie Telescope News

Chief Astronomer Cole Rees and a small group of volunteers have been working diligently toward the goal of fully automated remote operation of the telescope. They've even taken some test images that hint at what the telescope will ultimately be able to capture once it's polar aligned and collimated. We recently solved an issue with the dome rotation controls so that it operates smoothly and tracks with the telescope. There are many more tasks to be completed; you can help by participating in Telescope Tuesdays, every week at 10am at the observatory. Not only will you help complete the work, but you'll get a look "under the hood" and begin to learn how the system operates. Contact Cole Rees at astronomer@bpaastro.org.

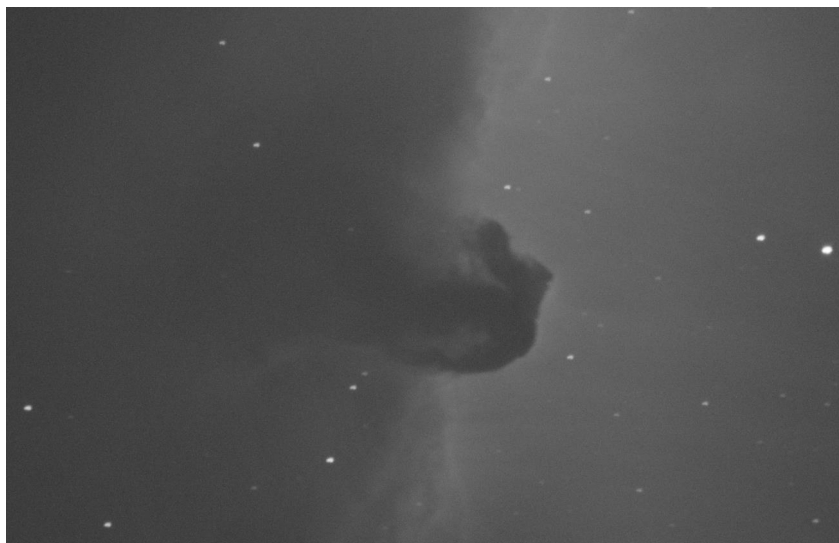
Check out these fantastic test images!



Melotte 15 Nebula



Jupiter at Opposition



Horsehead Nebula

WHAT'S UP (COMING)!

Source for events and links are [In-The-Sky.org](https://www.in-the-sky.org), Dominic Ford, Editor

Jan 4 – [Quadrantid meteor shower 2023](#)

Jan 6 – Full Moon

Jan 12 – [C/2022 E3 \(ZTF\) at perihelion](#)

Jan 15 – [M47 is well placed](#)

– [NGC 2403 is well placed](#)

Jan 19 – [γ-Ursae Minorid meteor shower 2023](#)

Jan 21 – New Moon

Jan 26 – [Asteroid 6 Hebe at opposition](#)

Jan 31 – [M44 is well placed](#)

Feb 1 – [C/2022 E3 \(ZTF\) reaches its brightest](#)

Feb 5 – Full Moon

Feb 19 – New Moon

– [M81 is well placed](#)

Mar 7 – Full Moon

Mar 20 – March Equinox

Mar 21 – New Moon

– [1 Ceres at opposition](#)

Mar 29 – [136472 Makemake at opposition](#)

The Top 10 Astronomy News Stories of 2022



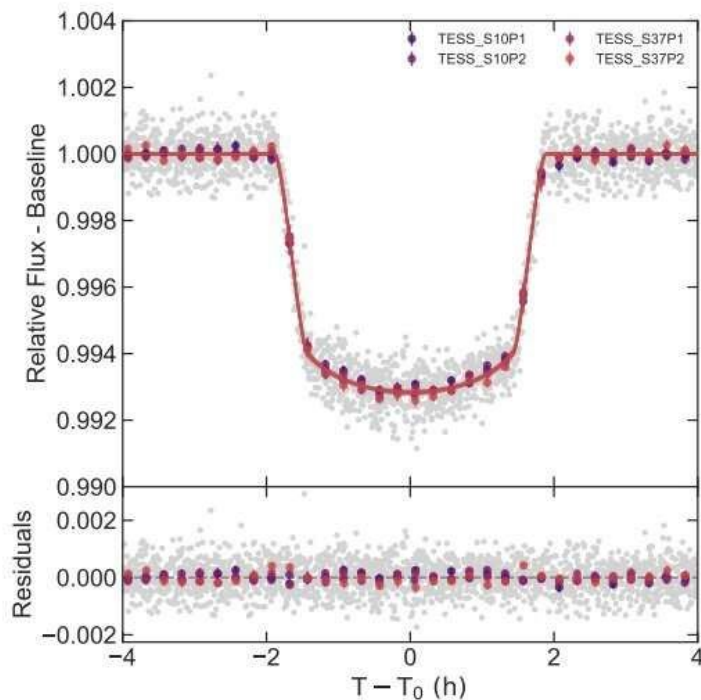
The protostar L1527, shown in this image from the NASA/ESA/CSA James Webb Space Telescope, is embedded within a cloud of material that is feeding its growth. Material ejected from the star has cleared out cavities above and below it, whose boundaries glow orange and blue in this infrared view. The upper central region displays bubble-like shapes due to stellar 'burps,' or sporadic ejections. Webb also detects filaments made of molecular hydrogen that has been shocked by past stellar ejections. Intriguingly, the edges of the cavities at upper left and lower right appear straight, while the boundaries at upper right and lower left are curved. The region at lower right appears blue, as there's less dust between it and Webb than the orange regions above it.

NASA / ESA / CSA / J. DePasquale (STScI)

The James Webb Space Telescope leads our list of the top news stories of the year. See what else made the Top 10!

(Source: [Sky & Telescope](#))

TESS Detects New 'Hot Jupiter' Exoplanet Orbiting a Rapidly Rotating Star

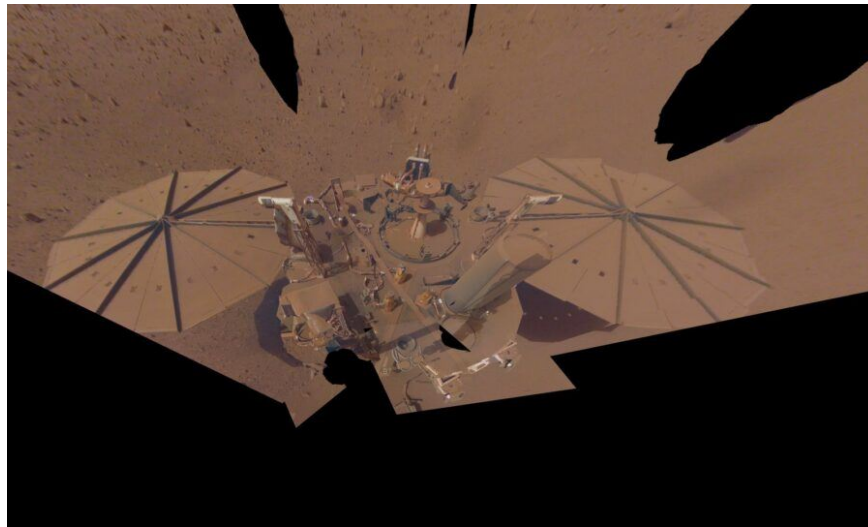


Phase-folded light curve model for TOI-778 b from the TESS data. Credit: Clark et al., 2022.

Using NASA's Transiting Exoplanet Survey Satellite (TESS), an international team of astronomers has detected a new "hot Jupiter" exoplanet. The newfound alien world, estimated to be nearly three times as massive as Jupiter, orbits a rapidly rotating star known as TOI-778. The finding is reported in a paper published December 16 on the arXiv pre-print server.

(Source: [Phys.org](#))

NASA'S Mars Insight Reaches End of Mission

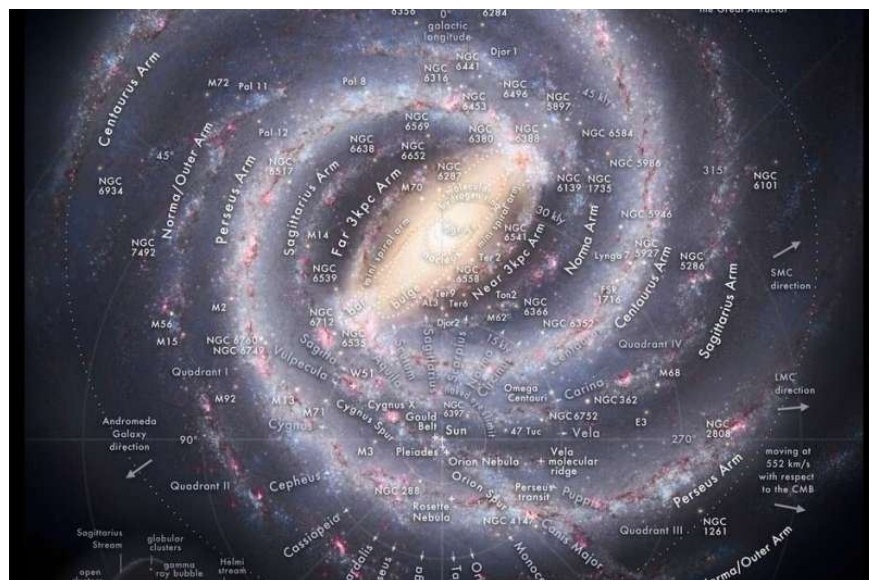


A selfie of a dusty Insight, captured on April 24, 2022. NASA

It was a sad moment, though we knew it was coming: After four years of collecting data on Mars, the Insight mission, short for Interior Exploration using Seismic Investigations, Geodesy and Heat Transport, has come to an end. The lander missed its last two communication passes and last “phoned home” on December 15th.

(Source: [Sky & Telescope](#))

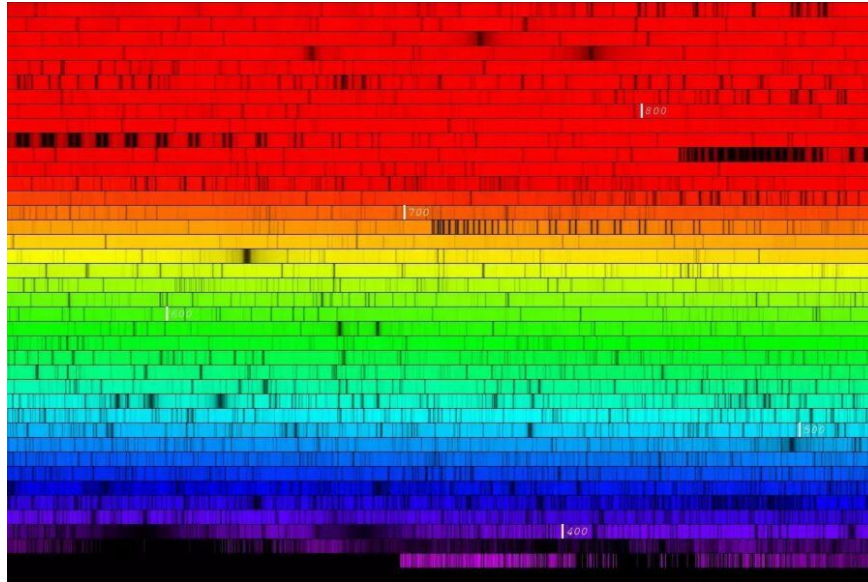
Is the Milky Way normal?



Credit: Pablo Carlos Budassi (Wikimedia Commons)

Studying the large-scale structure of our galaxy isn't easy. We don't have a clear view of the Milky Way's shape and features like we do of other galaxies, largely because we live within it. But we do have some advantages. From within, we're able to carry out close-up surveys of the Milky Way's stellar population and its chemical compositions. That gives researchers the tools they need to compare our own galaxy to the many millions of others in the universe.

What Is the Sun Made Of? New Data Deepens Debate

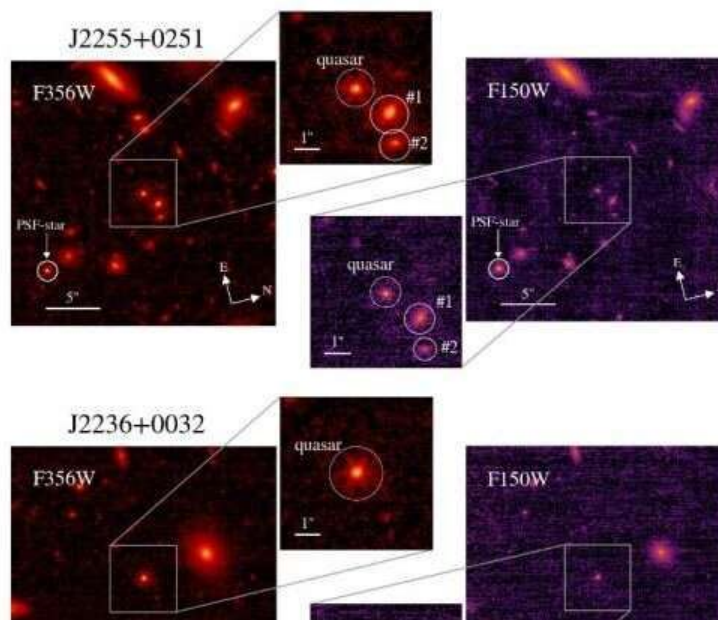


The Sun's spectrum includes a forest of dark lines, specific wavelengths absorbed by atoms in the Sun. Such information enables astronomers to deduce a star's temperature and chemical composition.
M. Bergemann / MPIA / NARVAL@TBL

Physicists working on the Borexino experiment in Italy have used solar neutrinos to measure the abundances of carbon and nitrogen in the Sun's core for the first time. Their analysis of almost five years of data deepens a decades-long debate between astronomers about the true composition of the Sun.

(Source: [Sky & Telescope](#))

Astronomers Spot Stars in the Most Distant Galaxies for the First Time





NIRCам images of the field around J2255+0251 (top panel) and J2236+0032 (bottom panel). Credit: Ding, X. et al. (2022)

Since it launched on December 25th, 2021, the James Webb Space Telescope (JWST) has taken the sharpest and most detailed images of the universe, surpassing even its predecessor, the venerable Hubble Space Telescope. But what is especially exciting are the kinds of observations we can look forward to, where the JWST will use its advanced capabilities to address some of the most pressing cosmological mysteries. For instance, there's the problem presented by high-redshift supermassive black holes (SMBHs) or brightly-shining quasars that existed during the first billion years of the Universe.

(Source: [Phys.org](https://phys.org))

2022 Officers

President - Frank Petrie
Vice President - *Your Name Here*
Chief Astronomer - Cole Rees
Chief Scientist - Steve Ruhl
Treasurer - Kim Wilkes
Secretary - Peter Moseley
Facilities Officer - Denise Hidano
Education Officer - *Your Name Here*

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