WEYMOUTH ASTRONOMY

Sky Watcher

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Trips / Events

Ideas for trips and events always welcome!

events@weymouthastronomy.co.uk

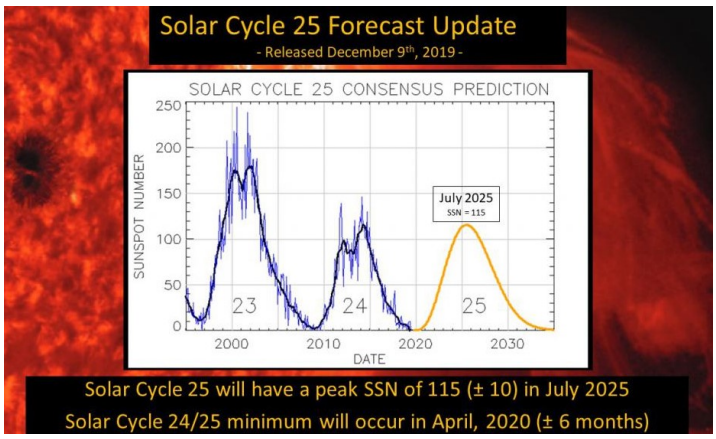
- **18 Mar CADAS—The Formation of Stars and their Planetary Systems by Dr Claire Davies (Exeter University)**
- **7 April WAS—Apollo - the Inside Story by Dr David Whitehouse**
- **15 April CADAS—Galaxy mergers by Professor Chris Lintott (Oxford University)**
- **5 May WAS - *The Gas Giants by* Steve Hill**
- **20 May CADAS—The Hubble Space Telescope – one month to save the telescope by Graham Bryant**

If you are interested in giving a talk or workshop, let the organisers know. They like to offer new titles in their programme line-up.

WAC Upcoming Events:

3rd Apr	David Bacon - The Dark En-
1st May	AGM + John Macdonald - Space Weath-
12th June	James Fradgley - How (on Earth) did life start
JULY	NO MEETING

Spring is upon us!



The ever increasing day length has been an inspiration for solar observing. The Sun is still showing the depths of the solar minimum but small sunspots are making brief appearances displaying the polarity of Solar Cycle 25.

A great site to monitor is the Space Weather Prediction Center by NOAA found at https://www.swpc.noaa.gov/ They have published an interesting Solar Cycle 25 Forecast. Looks like 2020 is expected to be the trough of the minimum with a peak nearer to July 2025. They have indicated that if the solar minimum prediction is correct, this would make Solar Cycle 24 the 7th longest on record (11.4 years).

The site also contains current videos and data of the solar activity which is a great resource for monitoring. Hope you find it of use too.

Until next time...SLK

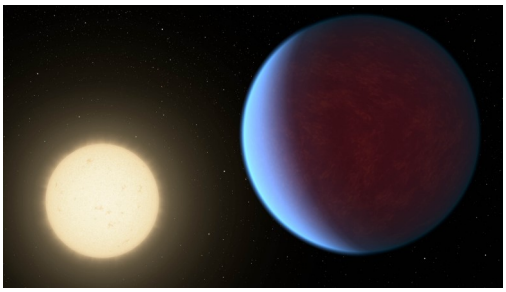
Dim Delights in Cancer

by David Prosper

Cancer the Crab is a dim constellation, yet it contains one of the most beautiful and easy-to-spot star clusters in our sky: the **Beehive Cluster**. Cancer also possesses one of the most studied exoplanets: the superhot super-Earth, **55 Cancri e**.

Find **Cancer's** dim stars by looking in between the brighter neighboring constellations of Gemini and Leo. Don't get frustrated if you can't find it at first, since Cancer isn't easily visible from moderately light polluted areas. Once you find Cancer, look for its most famous deep-sky object: the **Beehive Cluster**! It's a large open cluster of young stars, three times larger than our Moon in the sky. The Beehive is visible to unaided eyes under good sky conditions as a faint cloudy patch, but is stunning when viewed through binoculars or a wide-field telescope. It was one of the earliest deep-sky objects noticed by ancient astronomers, and so the Beehive has many other names, including Praesepe, Nubilum, M44, the Ghost, and Jishi qi. Take a look at it on a clear night through binoculars. Do these stars look like a hive of buzzing bees? Or do you see something else? There's no wrong answer, since this large star cluster has intrigued imaginative observers for thousands of years.

55 Cancri is a nearby binary star system, about 41 light years from us and faintly visible under excellent dark sky conditions. The

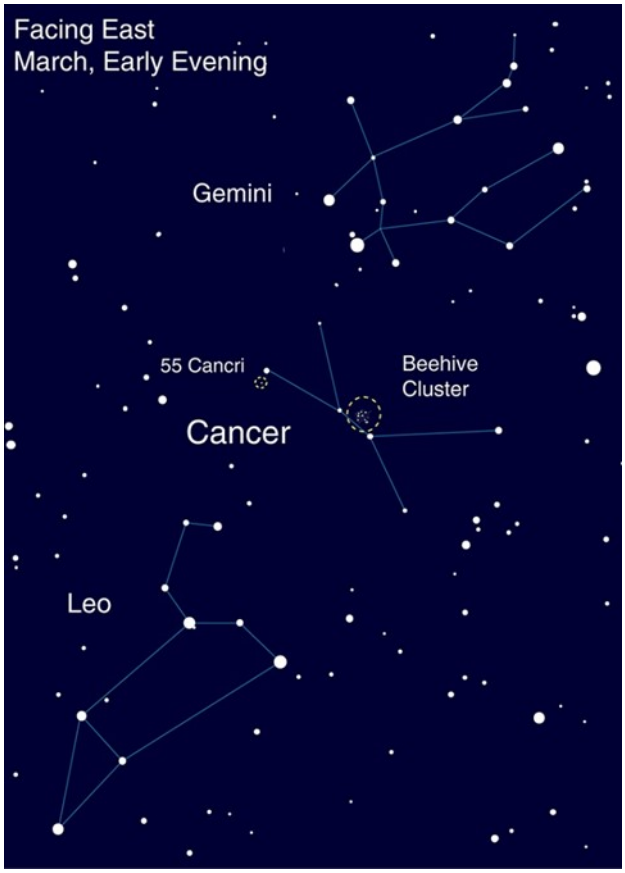


Artist concept of 55 Cancri e orbiting its nearby host star. Find details from the Spitzer Space Telescope's close study of its atmosphere at: bit.ly/spitzer55cancrie and the Hubble Space Telescope's observations at bit.ly/hubble55cancrie Credit: NASA/JPL-Caltech

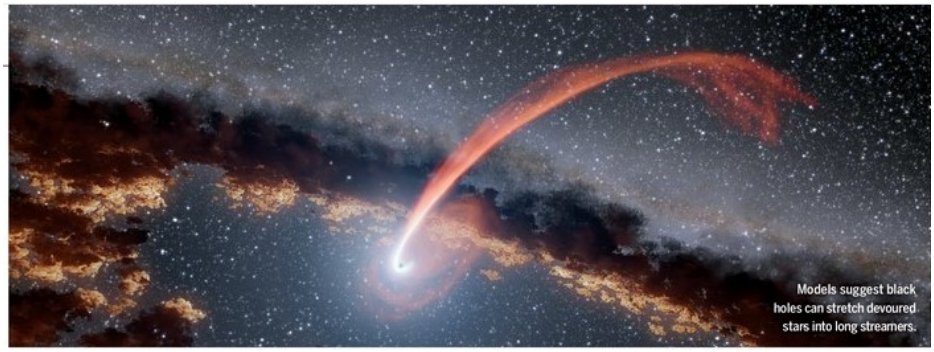
Crab Nebula (more!)

larger star is orbited by at least five planets including **55 Cancri e**, (a.k.a. Janssen, named after one of the first telescope makers). Janssen is a "super-earth," a large rocky world 8 times the mass of our Earth, and orbits its star every 18 hours, giving it one of the shortest years of all known planets! Janssen was the first exoplanet to have its atmosphere successfully analyzed. Both the Hubble and recently-retired Spitzer space telescopes confirmed that the hot world is enveloped by an atmosphere of helium and hydrogen with traces of hydrogen cyanide: not a likely place to find life, especially since the surface is probably scorching hot rock. The NASA Exoplanet Catalog has more details about this and many other exoplanets at bit.ly/nasa55cancrie.

How do astronomers find planets around other star systems? The Night Sky Network's "How We Find Planets" activity helps demonstrate both the transit and wobble methods of exoplanet detection: bit.ly/findplanets. Notably, 55 Cancri e was discovered via the wobble method in 2004, and then the transit method confirmed the planet's orbital period in 2011!



Look for Cancer in between the "Sickle" or "Question Mark" of Leo and the bright twin stars of Gemini. You can't see the planets around 55 Cancri, but if skies are dark enough you can see the star itself. Can you see the Beehive Cluster?



Black holes caught in the act of swallowing stars By Daniel Clery [An excerpt]

At the center of nearly every galaxy lies a monster, a giant black hole millions or even billions of times heavier than the Sun. Some, known as quasars or active galactic nuclei, shine brightly from across the universe as they continuously devour surrounding gas. But most are dormant, lurking invisibly for thousands of years—until a star passes too close and is ripped to shreds. That triggers a months long tidal disruption event (TDE), which can shine as brightly as a supernova.

Until a few years ago, astronomers had spotted only a handful of TDEs. But now, a new generation of wide-field surveys is catching more of them soon after they start—yielding new insights into the violent events and the hidden population of black holes that drives them.

The fingerprints of certain gases in the spectra of the visible light can reveal what kind of star went down the black hole's maw. Gezari and her colleagues found that the TDE spectra fell into three classes, dominated by hydrogen, helium, or a mixture of gases. Hydrogen likely signals large, young stars, whereas helium events could point to the cores of older stars whose hydrogen shells were stripped away—perhaps by an earlier brush with the black hole. She says the proportions reveal something about the populations of stars at the very centers of galaxies, at distances from Earth that would otherwise be impossible to probe.

Theory does suggest black holes can become too massive to trigger TDEs. Above a mass of 100 million suns, black holes should swallow stars whole rather than tearing them apart as they approach. So far, all of the growing number of TDEs come from smaller galaxies, suggesting the limit is real.

With the tally of captured TDEs growing fast, and hundreds or even thousands of discoveries per year expected from new surveys, researchers are hopeful that the events will answer more questions. "My dream is for TDEs to be some kind of ruler or scale for black hole mass," Gezari says. "We're not there yet but we're getting closer."

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