Friends Of Galileo
ASTRONOMY CLUB

Greg Smith – editor

Volume 26, No.7
November 2020

Program: **Greg Babcock -"Solar and Lunar Images with Simple Planetary Cameras".**

Meeting: November 18, 2020
Online at 7:00 p m

Hope and fun this winter.

The Astronical news lately has been filled with reports of new planets, and star systems with new planets forming. This is all great and exciting but, this is not really relateable to peoples daily life. Sure it is some positive news in the deluge of negative news. It shows that life is continuing on and exploration continues.

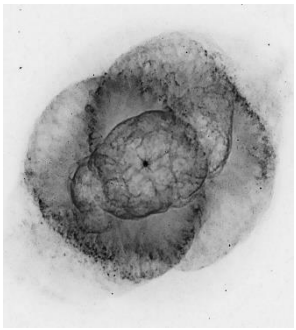
Take for instance the launch of the new 4 member crew to the space station. On the new Space X Dragon crew capule. The have called it "Resiliance". Even in tough times, we as a people continue on and work together to accomplish tasks that are at hand.

Take for instance our club. We are continuing on. We are adapting to new ways of doing things. Sure, having a ZOOM meeting is not the comradery of an actual person to person meeting. We are at the least staying in touch with each other. Being apart in not the same as being alone. A connection is still maintained. Let us not give the hope we will meet in person again. A good party will be required when we get together again.

With upcoming holidays, and the outlook of having extremely small gatherings, if any at all. What should be done with that empty time? I know this may sound a bit childish but how about getting yourself a Christmas present of a Lego space themed model to build. I have been given several and I found that they have given me a better understanding of what all went into building the moon landers($100), or the ISS($66), and the big Saturn V rocket($120), yes they are a bit spendy, but the hours that it takes to build these can be a great bonding time.

If you have kids or grandkids, say seven or older, they may enjoy working with you in building one of them. All the while talking to them about space and what is involved in exploring space. I'll be truthful, even if it's a Star Wars space craft, it could be quite entertaining. It brings space in the hands of the younger generation. This could then bring them into asking questions about your own telescope and what you see from your own backyard. Making space personal and not just something way out there.

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



A new, full analysis of Kepler data finds at least 300 million Earth-size planets in the habitable zone around Sun-like stars in our galaxy.

BY: ARWEN RIMMER

NASA's Kepler telescope was retired a few years ago, but ongoing analyses of its data, both by professional astronomers and citizen scientists, are still producing new results.

The mission's primary goal was to try and estimate the prevalence of Earth-size planets on Earth-like orbits around Sun-like stars. But understanding the occurrence of such planets has proven difficult, even though Kepler has found more than 2,600 exoplanets (and counting). Now, an international collaboration led by Steve Bryson, a researcher at NASA Ames, has announced a refined estimate.

The team, including NASA scientists, SETI researchers, academics, former-Keplerites, and other planet hunters, performed a statistical analysis that combined Kepler's planet catalog and stellar data from the European Space Agency's Gaia observatory. They found that about half of the Sun-like stars in our galaxy could have a rocky planet in their habitable zones.

MAKING UP FOR MISSING DATA

Team member Michelle Kunimoto (MIT) says this estimate is more reliable than previous ones: "Most previous estimates did not take into account that planets are more or less common around stars with different temperatures," she says.

The Kepler mission used the transit method, detecting planets by the slight dimming of a host star when its planet passes in front of it. This technique revealed planets by the thousands, but it's easier to find gas giants orbiting close to their host star rather than Earth-size planets on farther-out orbits. Kepler is sure to have missed lots of rocky worlds.

To account for this effect, Bryson's team worked with Kepler's planet-detection "pipeline," which has become well-versed in both authenticating and debunking planet candidates, as well as finding ones that were previously missed. Experience has taught them which 'dips' in the light are caused by interference from objects like eclipsing binaries, stellar companions, or planets from other systems. Isolated blips also sometimes turn out to be planets with longer orbits.

"We figured a way to measure how many planets we were missing. It's a huge number," Bryson explains. "And then we had to figure how many were typically false positives. That's also a huge number." Taking all this information, the team estimated the number of rocky planets with ½ to 1½ times Earth's mass in the habitable zone around Sun-like stars. The team analyzed all their stellar and planetary data via two different techniques and compared the results. They matched.

"It was a relief when the answer was reasonable, not a million planets, or zero," Bryson says.

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The study, soon to be published in The Astronomical Journal, predicts that there are at least 300 million habitable-zone rocky worlds in the Milky Way. A handful of these are within a few light-years of Earth. This result assumes that the section of the sky Kepler monitored for four years is representative of the whole galaxy.

It is important to note that this new estimate does not tell us where to find an exoEarth, or what fraction of those above-mentioned 300 million worlds actually has life. But the result does suggest, based on an analysis of a large amount of astronomical data and with a high degree of confidence, that potentially habitable Earth-size planets around Sun-like stars are common.

"We have absolutely no information about whether planets in the habitable zone are in fact inhabited," Bryson said. "That will be the purpose of future missions. And this prediction helps the endeavor by making it hopeful; because it's much more likely that a direct imaging telescope will actually be able to succeed in imaging a rocky planet in the habitable zone."

Bryson sees this project as a kind of ode to the Kepler mission. Indeed, most of the original team members, including the mission's principal investigator Bill Borucki (NASA), were involved in the study.

"We're not claiming this is the final answer," Bryson says. "But it is the best answer the Kepler team knows how to do."

Minutes of the October Meeting

Ted gruber opened the meeting at 7pm and welcomed the zoom attendees.

Howard Kyntych gave a presentation on what he is able to photograph from his home observatory made from a converted chicken-coop. As he described it sometimes you get eggs and other times you get poop. By that he means that dust particles can get in the way of the photons and leave dark holes in the picture you are taking.

He shared examples of his photographs that he has taken from his observatory, showing the dark splotches in his photos and when there is no dust in the light path.

Ted then gave the star report –

Sunday Oct 25th is to have a good chance of seeing arouras in the low northern sky.

We are still tentative about the Solar Walk this Dec 19th. Many of last year's participant sponsors are hoping to join us at the lake. The city is still undecided about the permission.

We had two visitors to our meeting, Erik Kaarto and Neil Brent. Welcome and hope to see them next month.

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☞ November 2020 Meeting ☜

DATE: **Wednesday November 18**
TIME 7:00pm
PLACE: Your Laptop / Tablet / or Smartphone.

A **Zoom** enabled meeting

PROGRAM: **Greg Babcock "Solar and Lunar Images with Simple Planetary Cameras".**

Drinks : Your Choice
Snacks : Whatever is in your Cupboards

Friends of Galileo Club Officers

PRESIDENT	Ted Gruber
VICE-PRESIDENT/ PROGRAM CHAIR	Mark Thorson
SECRETARY	Greg Smith
TREASURER	Steve Powell
WEBSITE	Ted Gruber
NEWSLETTER ED.	Greg Smith
ALCOR	Tom Meek

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: grlyth@msn.com

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