

**Greg Smith – editor**

**Volume 26, No.5  
August 2020**

**Program: LCC Analemma**

**Meeting: September 16, 2020  
Online at 7:00 p m**

## Teaser

Here is a teaser on the story I am writing.

The third-floor conference room, with its three large windows looking out over D street in Washington D.C had a dismal gray view as it was cloudy and raining.

The directors of NASA and JPL sat at a large oval fake wood desk, with their backs to the glass where they had been interviewing several engineering teams, all with grandiose missions to the outer Kuiper Belt object and investigating this remote object.

The JPL director asked these four young engineers what they thought should be the next step.

Kathleen spoke first, “ What about just asking them who they are, why they were here, and how long had they been here.”

The directors looked at each other with surprise at the directness of the idea and questions. Peter also brought up the point about the ability to communicate; if they had been here for an extended time they may have deciphered our communications and we would get an answer, and if only here a short time they may not be able to give an answer.”

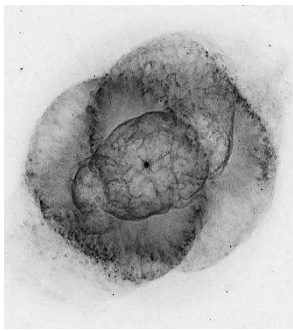
Gary cleared his throat and said,” We might want to tone down the directness of the questions; they might seem a little aggressive.”

Lucy nodded in agreement. The directors sat and thought for a moment and talked with each other and concluded that Peter and Kathleen were perfect for being the spokespeople for the project. Their submitted project concept was the fastest way they were ever going to find out anything. Modifying a large radio scope to broadcast and pointing it in the direction of the Kuiper Belt object and send them a message was the simplest and easiest way to do it.

The two directors, having already decided this proposal was the simplest, told them that Kathleen and Peter would be the “face” for the media campaign. Two bright, positive young people would be a point of reference for the new adventure for humanity. The directors knew that a lot of people would question using such youthfulness, but they had an army of media specialists to back them up. These were the people who came up with the idea in the first place.

This is part of the second page of Chapter One. There are Eleven Chapters

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



Vera Rubin  
is  
Photogenic!



## **3,200 megapixels! The camera heart of future Vera Rubin Observatory snaps record-breaking 1st photos**

By Mike Wall

The resolution is so good that a golf ball would be visible from 15 miles (25 kilometers) away.

The camera core for the future Vera C. Rubin Observatory has snapped its first test photos, setting a new world record for the largest single shot by a giant digital camera.

The imaging sensor array, which comprises the focal plane for Vera Rubin's SUV-sized 1, snapped the 3,200-megapixel images during recent tests at the Department of Energy's (DOE) SLAC National Accelerator Laboratory in California. ("SLAC" stands for "Stanford Linear Accelerator Center," the facility's original name.)

The photos are the largest single-shot pictures ever taken, SLAC officials said — so big that showing just one of them full-size would require 378 4K ultra-high-definition TVs. The resolution is so good that a golf ball would be visible from 15 miles (25 kilometers) away.

The first images don't show distant golf balls, however. The SLAC team that's building Vera Rubin's LSST (Legacy Survey of Space and Time) Camera focused on nearby objects, including a Romanesco broccoli, whose intricately textured surface allowed the sensors to strut their stuff.

"Taking these images is a major accomplishment," SLAC scientist Aaron Roodman, who's responsible for the assembly and testing of the LSST Camera, said in a statement. "With the tight specifications, we really pushed the limits of what's possible to take advantage of every square millimeter of the focal plane and maximize the science we can do with it."

Like the imaging sensor in your cellphone camera, the LSST Camera's focal plane converts light emitted or reflected by an object into electrical signals that generate a digital photo. But the LSST Camera's imaging core is far larger, more complex, and more capable than any consumer electronic product.

The newly tested focal plane is more than 2 feet (0.6 meters) wide and harbors 189 individual sensors, or charge-coupled devices (CCDs). The CCDs and their associated electronics are housed in 21 separate "rafts," subunits that are about 2 feet tall, weigh about 20 lbs. (9 kilograms) and cost up to \$3 million apiece.

The rafts were built at the DOE's Brookhaven National Laboratory in New York and then transported to SLAC. In January 2020, the SLAC team finished slotting the 21 sensor-bearing rafts, plus another four specialty rafts not used for imaging, into their assigned places in the focal-plane grid, an exacting and nerve-wracking process that took about six months.

The rafts are packed incredibly tightly to maximize the focal plane's imaging area; the gap between CCDs on neighboring rafts is less than the width of five human hairs, SLAC officials said. And the sensors are fragile, cracking easily if they touch one another.

The combination of high stakes and tight tolerances made this project very challenging," SLAC mechanical engineer Hannah Pollek, a member of the sensor-integration team, said in the same statement. "But with a versatile team, we pretty much nailed it."

The newly released images are part of extensive, ongoing tests designed to vet the focal plane, which has not yet been installed on the LSST Camera. That integration step will happen in the next few months, as will the addition of the camera's lenses and other key components, if all goes according to plan.

The camera should be ready for final testing by the middle of next year, SLAC officials said. It will then be shipped to the Chilean Andes, where the Vera C. Rubin Observatory is being built.

The observatory, previously known as the Large Synoptic Survey Telescope, will use its 27.6-foot-wide (8.4 m) mirror and 3.2-billion-pixel camera to conduct a landmark 10-year study of the cosmos — the Legacy Survey of Space and Time for which the camera is named. The camera will generate a panorama of the southern sky every few nights, amassing an astronomical treasure trove that will include imagery of about 20 billion different galaxies.

"These data will improve our knowledge of how galaxies have evolved over time and will let us test our models of **dark matter** and **dark energy** more deeply and precisely than ever," Steven Ritz, project scientist for the LSST Camera at the University of California, Santa Cruz, said in the same statement.

"The observatory will be a wonderful facility for a broad range of science — from detailed studies of our solar system to studies of faraway objects toward the edge of the visible universe," Ritz said.

## **Minutes of the August Meeting**

Ted Gruber, president, started the meeting by thanking everyone for coming out and Howard Knytych for hosting our Zoom meeting tonight.

Greg Smith was our speaker tonight. His presentation was titled, Backyard Astronomy How I Deal With a Neighbor's Light Pollution. It just so happens that his neighbor's light are very bright even though they are Dark Sky approved. Has come up with using 2x2' and 1 x 2's to make a brace that will hold plastic tarps. He attaches it to the fence to block the light. It seems to work very well. If you would like more information on how to make one, please contact Greg.

Ted gave the Sky Report. The evening sky hosts both Jupiter and Saturn which rise in the SE before sunset. Mars rises about 10:30 pm. In the morning sky you will find Venus, which rises about 2:30 am. The Perseid's are still active until August 24th.

Due to COVID, our September meeting, and all meetings until further notice, will be a Zoom meeting. Longview School District will be doing remote learning to start the school year, so the school is not available. Cowlitz County is still in Phase 2, which only allows groups of up to 5 people.

We have one more star party scheduled for this year. It is scheduled for Sept 18/19, the weekend after our next meeting, at Mike's home. We might do an impromptu meeting this Saturday depending on the weather. An email will go out if we do have one.

Elections will be held at the September meeting. An email will be going out in the next week or so talking about elections.

Roy Gawlick said he would like to start some tentative plans for the Solstice Walk. He wants to put "feelers" out to sponsors, but not collect any money at this point. He is also going to talk to the city. The guess is that the city will say No as of this point since all other activities have been cancelled due to COVID.

Meeting adjourned.

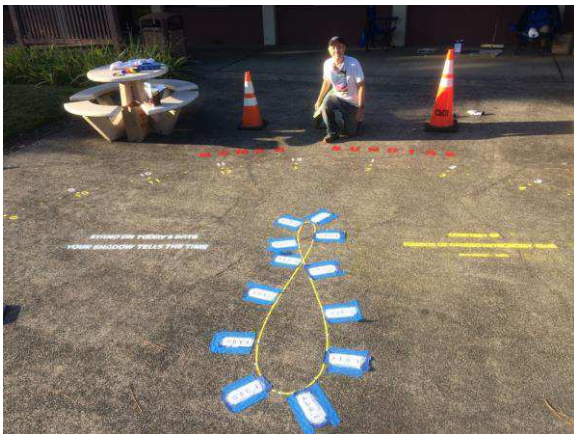
## 2020 Friends of Galileo Astronomy Viewing Schedule\*

September Moon: Full=2, New=17

16 Club Meeting Zoom

18/19 Club Star Party (Mike's)

## Re-painting the LCC Analemma – Mark Thorson & Steve Powell



☞ **September 2020 Meeting**



DATE: **Wednesday September 16**  
TIME 7:00pm  
PLACE: Your Laptop / Tablet / or  
Smartphone.

A **Zoom** enabled meeting

PROGRAM: LCC Analemma

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: [gryth@msn.com](mailto:gryth@msn.com)

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