

Program - Dr. Becky Smethurst, video, latest James Webb Space Telescope findings of unexpected large galaxies in the early universe.

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Greg Smith – editor

Meeting: Wednesday 7pm
March 15, 2023

ZOOM/R. A. Long Rm 130

The article on the next page has given me something to think about. How would you set up time zones on the Moon? How many of them would you need? One standard time or Twenty Eight (one for each “day” that the Moon takes to go around the Earth)? How would you divide up each zone? What would you call them? Would you use the major geologic features to name them, such as Mare Tranquility Time, or Mare Serenity Time? Where would you start? Here on Earth we have Greenwich or UTC (universal time) that starts in London, England. What about the names on the far side of the Moon? Those time zone names would have a lot of Russian names as the features and craters were named by the Russians as they were the first to photograph the far side of the Moon.

What about two time zones? One for the Earth facing side and the other for the non-facing side. *Near time and far time*. But what about the poles? How would you set a standard time for them since the poles encompass both far and near sides. The European Space Agency and NASA both have conundrums to figure out. Just don't let Elon Musk get involved. He'll mess it all up, just like he did with his Starlink

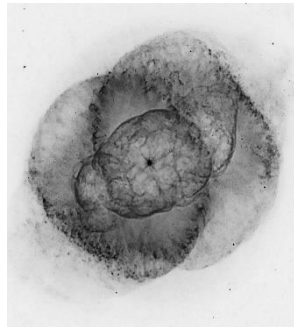
satellites. The Hubble flies lower than the Starlink satellites, so they get in the way of Hubble's research.

Maybe use a decimal time system similar to star trek. Use the year, month, day and time in a decimal format? For example: 2024.05.15.13:45 [year.month.day.time]. Since astronomical time is set with UTC time anyway.

That could be cool, then again where does it start? Like Greenwich is the starting point for longitude and time zones, how about using the first base that is established as the start point? To keep things in sync with earth, the year, month, and day could be attached to UTC time with the hour attached to Moon Time. It would work for Mars too. How about that, I just kind of figured it out. Maybe I should submit my idea to the ESA.

I'll bet you had not thought of Moon time before, I know I had not.

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



Should the moon have its own time zone?

By Denise Chow

Pacific Time, Eastern Time, Greenwich Mean Time — and one day, perhaps, Moon Time?

With dozens of lunar missions planned for the years ahead — including ones to build bases and other habitats on the moon — it may be time for some synchronicity, according to the European Space Agency.

Time in space is usually calculated based on the time on Earth, but as different nations plan to operate on and around the moon, it may require a universal method for lunar timekeeping.

A standard, agreed-upon time zone for the moon will not only ease collaboration between space agencies around the world, but could ensure more precise guidance and navigation on the lunar surface.

There are, however, some significant hurdles, according to European space officials. For one, it's not yet clear if a single space agency should be responsible for establishing and maintaining “moon time.” And if a new time zone is created, should it be tied to time on Earth, or function as its own thing entirely?

The European Space Agency is developing a lunar lander called Argonaut. A standard, agreed-upon time zone for the moon could ensure more precise guidance and navigation on the lunar surface.
European Space Agency

There are also debates about how to even figure out lunar timekeeping. Clocks on the moon gain roughly 56 microseconds per day (one microsecond is equal to one-millionth of a second), making them tick ever so slightly faster than clocks on Earth.

These tiny shifts also vary depending on location, which means clocks on the moon don't necessarily run at the same rates as clocks in lunar orbit.

“Of course, the agreed time system will also have to be practical for astronauts,” said Bernhard Hufenbach, who works in ESA's Directorate of Human and Robotic Exploration.

Typically, missions to the moon use deep space antennas to keep onboard systems synchronized with time on Earth, but European space officials say this method may not be sustainable as humans establish a more permanent presence on the moon.

Many of these discussions are already underway as part of NASA’s “LunaNet” initiative, a project to develop technologies, techniques and standards for lunar communications and navigation. These efforts are a key part of the agency’s Artemis program, which aims to build lunar bases and launch regular mission to the moon before venturing on to Mars.

In November, space officials gathered at the European Space Research and Technology Centre in the Netherlands to discuss priorities moving forward.

“During this meeting ... we agreed on the importance and urgency of defining a common lunar reference time, which is internationally accepted and towards which all lunar systems and users may refer to,” Pietro Giordano, a navigation system engineer at ESA, said in a statement. “A joint international effort is now being launched towards achieving this.”

☞ **March 2023 Meeting** ☞

DATE: March 15, 2023

TIME: 7:00pm

PLACE: Hybrid in person / Zoom - originating from R, A. Long H. S. Rm 130

PROGRAM: Dr. Becky Smethurst, latest James Webb Space Telescope findings of unexpected large galaxies in the early universe.

Moon Phases

Full: Feb. 16, Wed. **3rd Qtr.**: Feb. 23, Wed. **New**: Mar.2, Wed. **1st Qtr.**: Mar 10, Thurs.

End of twilight - when the stars start to come out.

Wed, Feb 15th 6:13pm Mon. Feb28th 6:26pm Fri. Mar 10th 6:40pm Wed Mar 15 7:46pm

The Star Report is posted on the clubs website: 1. It is listed in the blog portion of the website.

Minutes of the January FOG Meeting

We had nine attendees at the meeting at R A Long High School, which was a good attendance. Six others attended by Zoom.

Mike Fiest gave a demonstration of the workings and quality of pictures of his new Vespera auto Telescope/Camera. This a compact telescope weighing only 11 pounds, versus 20+ pounds for his other auto telescope. This cost “only” \$2500.00 rather than the \$4000.00 for his other scope. The picture quality is close to the same but the Vespera has a wider field of view so objects are smaller but can be zoomed in for a larger and closer look.

It looks like we will be helping out at the Longview Public Library’s instructional meeting on the upcoming Annular Eclipse. The meeting will be in the last half of September while the Eclipse will be on Saturday October 16th this will be a morning Eclipse. So get those sun viewing glasses out and have them ready.

This year **Earth Day** will be on **April 29th** at Lake Sacajawea Park . More details will follow, but we will need volunteers to man a booth. So be checking and marking your calendars.

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