

Black Canyon Astronomical Society (BCAS)

Monthly Meeting Minutes

Thursday Aug 11, 2022

6:00 to 8:00 p.m.

57 connections

Ended 7:25 pm

Minutes prepared by Sara Ungrodt - co-secretary

Note: **BCAS Business Topics:** Business was not covered in this video conference.

Bryan is recording.

Dr. Kelly Lepo - Education outreach scientist for Space Telescope Science Institute in Baltimore MD. Johns Hopkins Univ. Thanks Val for connecting her to us.

Bryan mentioned a record 90 people registered for this mtg.

Combined mtg with WCAC and various eastern clubs. Nancy thanked Kelly for James Webb 1st photos!

Astro news: Update on Paonia lighting ordinance- Aaron W joined meeting later. Including DMEA changing out 100 streetlights. Ordinance passed thru city council.

Missions operations center- store data.

How Webb came to be

Why infrared

What exciting things it has done and what will be

1990s-Several telescopes launched. Spitzer, Chandra- showed photo comparisons from these scopes. Farther away the redder it appears in infrared. Limits what Hubble can see. UV visible light.

Next Generation Telescope was Webb's 1st name. 2002 final design- was renamed then.

Has 5 layers of sun shield. French Guyana Dec 25, 2021, launch.

It is shiny and small, needed to launch in a compact situation due to small launch vehicle,so had to unfold. Iconic part tennis court size sun shield. Keeps Webb cold. Kapton material- 5 layers.

Passively cooling scope. Large temp differences for thin membranes. Bigger mirror, better resolution. 18 hexagonal gold coated segments- gold reflects infrared light.

Near L2 now In big orbit, not exactly at L2. Solar powered needs a little propellant. Designed for 5 yrs worth. But has 20 yrs worth because of efficient travel to L2.

How do we talk- 3 receiving stations. Takes 5 seconds to get there, 10 seconds back. 57.2 gigabytes of data a day.

Showing photo of star showing proper alignment. 6 spikes coming out of it. Accidentally taken a deep field shot- many galaxies.

Webb's mirror shape. Creates distinct patterns in light. Strut influence. Is not an error. Can you remove them? Sometimes to study specific things. Generally, not.

Webb's 1st deep field- galaxy clusters. Orange arcs are background galaxies warped by intervening galaxy cluster. Very Exciting!!

Visible vs. infrared light. Glowing images. Webb can see thru dust because of infrared. Oldest galaxies appear as red.

Use spectroscopy to sort out light. Look for patterns when you zoom in and see various tones of red.

Pattern shifting tells us how old the galaxies are and how far away.

Future- explore the universe with Webb. NASA lead partner but MANY partners.

Galaxies and exo-planets next focus.

Black holes

Stuff in our solar system

Large scale structure of our universe.... Big bang neutral hydrogen gas.. condensing to stars... galaxies...era of reionization.

COSMO Webb survey, survey goal, want to find the bubbles in Era of ionization.

GNZ11 farthest galaxy away 400 million years after Big Bang that Hubble imaged.

Webb can collect light even further away. Images aren't quite as expected of ancient universe.

Explore Cores of merging galaxies

Cartwheel Galaxy from Webb. Very cool large spiral another galaxy crashed thru center.

Incredible photo.

Stephan's quintet-galaxies interacting with each other.

Can see gas composition around black holes

Measure velocity of gas around black hole and how its moving.

Teach us how stars live, form, and die

Carina nebula-star forming region star nurseries and gas jets coming off

Study Wolf-Rayet Stars- strong winds that expose helium core. They orbit around each other.

When they collide, they create dust. Image dust spiral in WR 140

Will observe planetary Nebula and Southern Ring nebula

Also study planets inside and outside our solar system. Questions

Hit by micrometeoroid. Time on Webb already filled for 2022

Bryans questions

Art-WASP 96B water detected and not CO2.

Bryan Webb booked 1 yr in advance

Alice thin membrane- meteorite go thru bag. Rip stops built into it. And 5 layers as a cushion.

Val life expectancy of Webb what is potential point of failure, fuel, gyroscope OK, computer fail or meteoroid impacts,

Art-new tech in 10 years servicing mission. Not yet. Don't have ability to get there.

Sept 8 7:00 hybrid meeting at Centennial Room. Art - Exploration and Geology of the moon.

Bryan will send the link of the recording- on zoom cloud.

Perseids tonight!