NASA’s Universe of Learning Science Briefing: Andromeda Galaxy

August 7, 2025

12:31:07 From Kelly Lepo to Everyone:

Copy of the slides and resources available at:

https://universe-of-learning.org/contents/events/science-briefings/2025/science-briefing-andromeda-galaxy

12:37:06 From Francisco Silva to Everyone:

why the 2001 look so retro?

12:38:30 From Francisco Silva to Everyone:

Has you try jwb?

12:42:22 From Francisco Silva to Everyone:

how log have for take that pic ?

12:44:44 From Francisco Silva to Everyone:

so is this more old that normal or not ?

12:46:18 From Francisco Silva to Everyone:

so how or what data have arrive to this conclusion?

12:54:20 From Adrienne to Everyone:

Will observations from the Vera Rubin telescope be helpful to your research on galaxy ecosystems?

12:56:02 From Francisco Silva to Everyone:

what level of temperature are we talking?

12:56:53 From Francisco Silva to Everyone:

temperature is how active are atomp?

12:58:32 From Francisco Silva to Everyone:

what is MW?

12:58:55 From James Tardiff to Everyone:

Replying to "what is MW?":

Milky Way

13:08:08 From Francisco Silva to Everyone:

so how we know that star are bete produce in galaxy?

13:15:45 From Adrienne to Everyone:

Thank you presenters for such stellar information!

13:16:10 From madhukar rao to Everyone:

Is it possible that some of the dwarf galaxies have a common origin?

13:17:27 From Dennis Crowley to Everyone:

Ground base imaging can detect the mass. Could this imaging detect the weight of galaxies?

13:17:32 From Adrienne to Everyone:

Will the Vera Rubin telescope be useful for any of these research projects?

13:17:47 From James Tardiff to Everyone:

If Andromeda's dwarf galaxies are between it and the MW, will Andromeda run into their dwarfs and scoop them up before it merges with the MW?

13:19:11 From Adrienne to Everyone:

Thanks for answering my question!

13:20:14 From madhukar rao to Everyone:

How do we explain the presence of dwarf galaxies between the MW rather than the other side of Andromeda?

13:20:20 From Robert O'Dell to Everyone:

Our galaxy is barred and andromeda and as you have said, it has a much more "interesting" history. Given my meager understanding of what causes a galaxy to be barred, I would expect Andromeda to be barred

13:21:20 From Paul Cirillo to Everyone:

What's the latest forecast for the merger of the MW with M31?

13:21:55 From Amelia Chapman (she, her) to Everyone:

what does being barred mean?

13:22:14 From Adrienne to Everyone:

A bar of stars across the center.

13:22:43 From Ivanna Escala to Everyone:

Replying to "Ground base imaging can detect the mass. Could thi...":

One common way to measure the mass of galaxies is actually from its motions! It is best to have 3D motions, but we can combine them with models to measure the combined mass of both stars and dark matter in the galaxy

13:23:30 From madhukar rao to Everyone:

Can you define the concept of the halo? Where does it start and how far outside Andromeda does it go?

13:24:02 From John McDonald to Everyone:

Briefly What have we learned from JWT that we didn't know from Hubble about M31

13:24:13 From Kelly Lepo to Everyone:

Replying to "what does being barred mean?":

Example of a spiral galaxy with a strong bar

https://science.nasa.gov/missions/hubble/a-poster-size-image-of-the-beautiful-barred-spiral-galaxy-ngc-1300/

13:25:53 From James Tardiff to Everyone:

Have we named or cataloged any stars in Andromeda?

13:27:27 From Ben Williams to Everyone:

Replying to "Have we named or cataloged any stars in Andromeda?":

We produced a catalog of over 200 million stars in Andromeda from the data that went into the photomosaic I showed.

13:27:51 From Michelle Collins to Everyone:

Replying to "temperature is how active are atomp?":

The temperature is really more of a measure of the mass of the particle. Colder particles are more massive, and they have lower relative velocities. Hotter particles are lower mass, and they tend to move more quickly through space

13:27:59 From Ivanna Escala to Everyone:

Replying to "Briefly What have we learned from JWT that we did...":

JW has been useful for obtaining spectra of individual stars in the disk of Andromeda, which is something we could not do with Hubble. From that, we have learned that the pattern of chemical composition in Andromeda's disk maybe different from the Milky Way, which is puzzling for our understanding of how stellar disks form!

13:28:03 From Ben Williams to Everyone:

Replying to "Have we named or cataloged any stars in Andromeda?":

That is the disk. There are also many that went into those stellar halo maps, but I don't know the number.

13:28:43 From Michelle Collins to Everyone:

Replying to "If Andromeda's dwarf galaxies are between it and t...":

They are all orbiting around it, so they will travel with it. Some of them may collide with Andromeda before Andromeda collides with us.

13:28:51 From Kelly Lepo to Everyone:

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13:30:29 From Michelle Collins to Everyone:

Replying to "What's the latest forecast for the merger of the M...":

Uncertain! A lot of work has been done to try and measure the 3D motion of Andromeda and work out when it will collide with us. I think some studies predict that it will happen in roughly 8 billion years. But one recent study suggested it might not hit us after all! So it's a little uncertain. Hopefully these measurements will improve in the next few years so we will know

13:31:15 From madhukar rao to Everyone:

Excellent presentations! Thank you very much.