



President's Message

Fall Paper Session

You should receive this a few days before our 49th Annual Fall Scientific Paper Session.

RAS members may still register at <https://rasny.org/paper-session>. It is free to attend and morning refreshments await you. Meet us at Thomas Gosnell Hall, Rochester Institute of Technology on Saturday, November 4th, 2023, 8 AM to 3 PM. There will be scores of fascinating research projects shown and discussed. Come hear our **Larry King Memorial Lecture** speakers Dr. Roger Easton, Jr. and Dr. Jeyhan Kartaltepe on "**Astronomical Images – the Oldest and the Newest.**"

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More on Dr. Jeyhan Kartaltepe:

I discussed Dr. Easton's work with ancient manuscripts previously in our September *Bulletin*. Now I introduce you to Dr. Kartaltepe, who works on data and images collected by the James Webb Space Telescope. She has sent the following, "The JWST launched in December 2021, first started



Dr. Jeyhan Kartaltepe (photo by Dr. Kartaltepe)

collecting data in June 2022, and is revolutionizing our understanding of the distant Universe. With its large segmented mirror, and optimization for infrared wavelengths, JWST was designed to detect and characterize some of the first galaxies to form in our universe and investigate how galaxies then evolve over the age of the Universe to the present day. In my talk [with Dr. Easton], I will present how JWST has pushed our cosmic frontier beyond what was possible with Hubble and share some early results from extragalactic deep surveys and their implications for our understanding of the early universe."

This past August, Dr. Kartaltepe was a co-author on a paper published in *Nature* confirming very bright galaxies in the early universe, while also disproving the identification of what would have been the most distant galaxy ever found. This is determined by measuring the redshift. Redshift is an increase in the wavelength (in visible light, this is towards the red end of the spectrum), and

corresponding decrease in the frequency and photon energy, of electromagnetic radiation (such as light). The main causes of electromagnetic redshift in astronomy are the relative motions of radiation sources. All sufficiently distant light sources show cosmological redshift corresponding to recession speeds proportional to their distances from Earth, a fact known as Hubble's law that implies the universe is expanding. (Wikipedia). The further an object such as a galaxy is from us, the older it is, the faster it is moving, and the more pronounced the redshift. The measured or estimated value of a redshift is often denoted by the letter *z*. When researching the data from the James Webb Space Telescope (JWST), scientists aim to find the highest redshift galaxies, or the most distant galaxies.

Dr. Kartaltepe and another RIT co-author, Rebecca Larson, along with other researchers from around the world, studied the redshift of several specific galaxies to see how much the light shifted, which indicates how far away the galaxies are. The Cosmic Evolution Early Release Science (CEERS) Survey team focused on Maisie's Galaxy, which was theorized to have a redshift of $z \approx 11.5$, while a team in Scotland researched a nearby galaxy that they believed could have a redshift of $z \approx 16$, far larger than any ever found before.

The team's measurements confirmed that Maisie's Galaxy did have $z > 11$, and that it existed when the 13.8 billion-year-old universe was just around 390 million years

(continued on page 2)

RAS Paper Session Schedule.

Saturday, 11/4

RIT Thomas Gosnell Hall 1 Lomb
Memorial Drive, Rochester, NY 14623

9-11AM Oral Presentations

11AM-12PM Poster Session A

12-1PM Lunch – on-campus food
stands or bring your own.

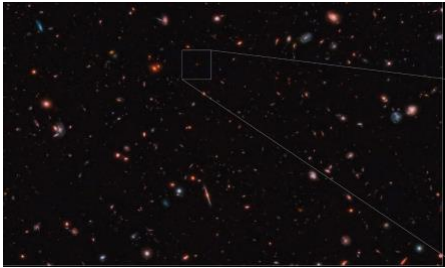
1-2PM Welcome & Larry King
Memorial Lecture. Gosnell 1250.

2-3PM Poster Session B

old, which is incredibly young for our cosmic expanse. This makes it one of the four earliest galaxies ever seen by human eyes.

The group also found that because of a coincidence that mimicked the colors of a high redshift galaxy, the other galaxy is not at a redshift of $z \approx 16$, but at a redshift of $z \approx 4.9$. Both the initial and follow-up data from JWST turned the theories into discoveries.

(This paper is Haro, P.A., Dickinson, M., Finkelstein, S.L., Kartaltepe, J.S., Donnan, C.T., Burgarella, D., Carnall, A.C., Cullen, F., Dunlop, J.S., Fernández, V. and Fujimoto, S., et al. 2023. Confirmation and refutation of very luminous galaxies in the early universe. *Nature*, pp.1-3.)



This image is a mosaic of 690 individual frames taken with the Near Infrared Camera (NIRCam) on the James Webb Space. The inset image below from the

small square above shows a close-up of one of the earliest galaxies ever seen, dubbed Maisie's galaxy. (Photo Credit: NASA/STScI/CEERS/TACC/S. Finkelstein/M. Bagley/Z. Levay.

<https://www.space.com/jwst-maisie-galaxy-earliest-observed>



The CEERS team has produced a fun short video (1:16), *Flight to Maisie's Galaxy*, which simulates a faster than light speed flight from among the deep field galaxies near the edge to the universe to this ancient galaxy.

<https://www.youtube.com/watch?v=M1n82zTBwQY>

Learn more about this and other JWST discoveries at the **Larry King Memorial Lecture**

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Michael Grenier, RAS President



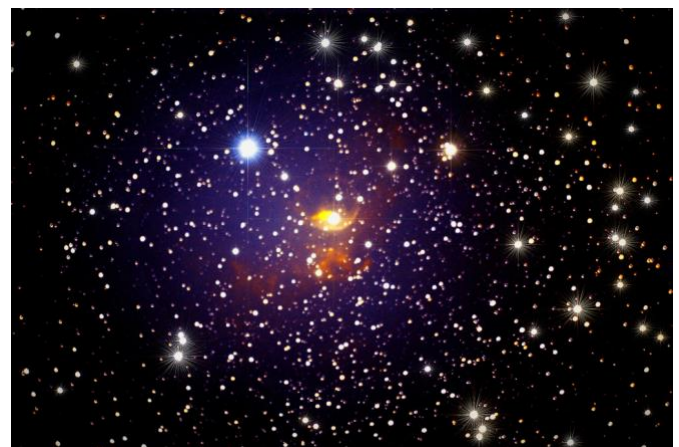
Hermit Thrush, High Tor, 2023. Photo: Doug Kostyk



Eight day moon from 16" Cave at Farash Center, Oct 23. Photo: Kevin Lyons.



Wolf-Rayet Star, Sept. 2023. Photo: Pat Cosgrove.



Bubble Nebula from Sodus Point, Oct 7, 2023. Two hours of 300 sec exposures with bias and darks. Photo: Kevin Lyons.

Events for November 2023

Nov. 1 Wed: ASRAS Board meeting

7:00 p.m. Farash Center in Ionia. ASRAS members are welcome. Contact: Anthony Golumbeck at semp@use.startmail.com.

Nov. 3 Fri: Astronomy Members Meeting

7:30 p.m. – 9:30 p.m. RIT Liberal Arts Building Room A-205. Jeffrey R. Miller of St. Lawrence University Physics Department will speak about the DART Mission “Deflecting an Asteroid”. Contact: Anthony Golumbeck at semp@use.startmail.com.

Nov. 4 Sat: Fall Paper Session and Larry King Memorial Lecture

8:00 a.m. – 3:00 p.m. RIT Gosnell Hall. See article on page 1.

Nov. 5 Sun: Astronomy Open House

12:00 p.m. - 3:00 p.m. Farash Center, Ionia. Come help out and learn how to operate the telescopes. Contact: Anthony Golumbeck at semp@use.startmail.com.

Nov. 8 Wed: Herbarium Workshop

1:00 p.m. – 4:00 p.m. The Life Sciences section will hold a workshop at the RAS Herbarium, located in the basement of the Rochester Museum and Science Center (RMSC). We will be continuing

to organize plant specimens in preparation for digitizing the collection. If you plan to attend, please send an RSVP to Elizabeth Pixley. At RMSC go to the front desk to meet other participants. For more information, contact Elizabeth Pixley, herbarium curator (334-0977 or eypixley@gmail.com)

Nov. 14 Tues: Fossil Meeting

7:00 p.m. Meeting will be held in the community meeting room at the NEQALS building, 1030 Jackson Rd., Webster 14580. It will also be broadcast on Zoom and is open to all RAS members and guests. Our guest speaker is Dr. D. Jeffrey Over, Distinguished Professor of Geological Sciences at SUNY Geneseo on the “Devonian of New York”. Dr. Over is one of the three editors of the massive Devonian of New York treatise published this year by the Paleontological Research Institution. He is a regular speaker with us. Few places on Earth reveal the ancient life and environments of the Devonian Period (419 to 359 Ma) better than New York State. American paleontology has its roots in the Devonian of New York and modern research in the state continues to teach us more about life on Earth

during this period of geologic time. For details, see the RAS October FossilLetter or contact Michael Grenier at paleo@frontier.com.

Nov. 15 Wed: RAS Board Meeting

7:00 p.m. – 9:00 p.m. at Church of the Ascension. Zoom option available. For details, contact Michael Grenier at mgrenier@frontiernet.net.

Nov. 28 Tues: Mineral Section Meeting

7:00 p.m.- Meet at NEQALS building, 1030 Jackson Road, Webster. Join us for snacks, door prizes, and a talk by Dr. Jacalyn Wittmer Malinowski of SUNY Geneseo. We will learn about the geohistorical record in Conesus Lake and how people have influenced the sediments. Contact: Jutta Dudley, juttasd@aol.com.

ONGOING EVENTS EVERY MONTH:

STRASENBURGH OBSERVATORY

ASRAS will operate the telescope at Strassenburgh Planetarium on mostly clear Saturday nights. Contact: Jim Seidewand (585) 703-9876.

Rochester Research in Review.

(These are Hot Links which when clicked lead to the press release on the Science Daily website.)

[Birders and AI push bird conservation to the next level. October 4, 2023. Cornell University.](#)

[Scientists propose super-bright light sources powered by quasiparticles. October 19, 2023. University of Rochester](#)

[Paleoclimatologists use ancient sediment to explore future climate in Africa. October 10, 2023. Syracuse University](#)



Copernicus crater from 16" Cave at Farash Center, Oct. 7, 2023. Photo: Kevin Lyons.

Eclipse Watch

On October 31st, 2022, it will be just **160** days until the total solar eclipse that should be visible from Rochester on Monday, April 8, 2024. As seen from western New York at mid-eclipse, the Sun will be in the southwestern sky, a little more than halfway up from the horizon to the overhead point.

Places to View the Eclipse

Western New York is home to two world-class museums. They have two different approaches to the eclipse.



The Buffalo Museum of Science is run by the Buffalo Society of Natural Sciences. They are actively supporting eclipse activities with outreach programs. The BMoS is facilitating eclipse programming for schools which includes science and safety programs, planetarium programs, and eclipse outreach programs for community groups. They have a large exhibit at the Museum to educate on the eclipse. Thanks to generous funding from Erie County, area residents can pick up complimentary eclipse viewing glasses from their local Erie County library (limit two per person). Erie County is preparing for as many as one million tourists to the Buffalo region.

However, both the Museum and their Tiff Nature Preserve will be closed on April 8, 2024. This is to allow their staff to experience this once-in-a-generation moment in science with family and friends. So, not a place for viewing.

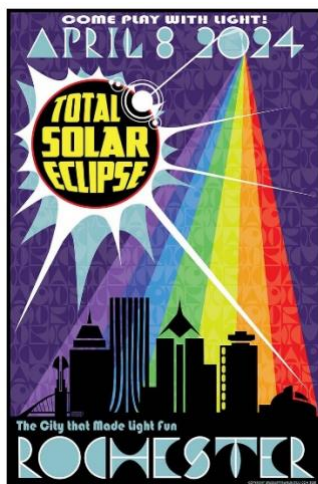
<https://www.sciencebuff.org/eclipse>



The Rochester Museum & Science Center (RMSC) on the other hand plans to be at the heart of Rochester's Total Solar Eclipse efforts. They are celebrating with a 3-day festival—*ROC The Eclipse*—filled with hands-on activities, speakers, music, food, planetarium shows, art work, and more! They expect several thousand guests each day of the festival. They're working towards making sure the eclipse is accessible and exciting to literally everyone under the sun. If you are not at the big ASRAS Eclipse Party at the Ionia Observatory, you could choose well in being at the RMSC.

The RMSC has a number of outreach programs underway, including their current *Eclipse 2024!* Program at the Strasenburgh Planetarium. They are coordinating the local tourism industry to prepare for a large number of visitors. Lectures, activities, and educational programs are scheduled throughout the region. They will be the major provider of eclipse glasses in the region. These retail for \$2.50 but the RMSC offers bulk rates to organizations throughout our community.

Traveling Eclipse Art Exhibit



The Rochester Eclipse Task Force is sponsoring a traveling art exhibit from eclipse artist and astronomer Tyler Nordgren, who designed the posters for Rochester, and whose

2017 eclipse artwork is at the Smithsonian.

The 30-poster exhibit, consisting of eclipse posters from 2017 and 2024, as well as Dr. Nordgren's New York Parks series, will be displayed at a different Rochester-area location each month through April, 2024.

The exhibit will be at the RIT University Gallery in James E Booth Hall, Room 2700 from November 6 through December 1, 2023. There will be a reception on November 16 from 4:30 pm to 6:30 pm.

It will then be at the Webster Parks & Recreation building (1350 Chiyoda Drive, Webster, NY 14580) from December 2nd through the 31st, 2023. There will be an Opening Party on December 2nd with refreshments.

New Video

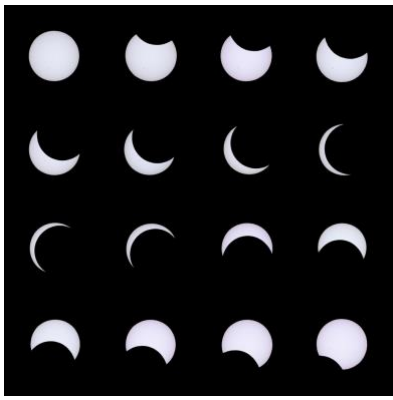
RAS member Devon Dice-Jaffri has produced an educational video especially for Upstate New York audiences. It is targeted to schools and community organizations. Devon is active with our Astronomy Section and is a NASA Solar Eclipse Ambassador Partner. The video is 6 minutes 45 seconds long and can be seen at

<https://youtube.com/watch?v=eHSqL Gd3PUY&feature=shared>.

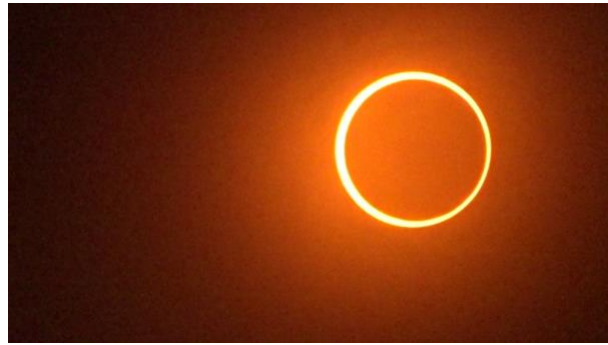


She interviews several experts including astronomer Holly Cohen at the Buffalo Museum of Science, President Michael Humphrey of the Buffalo Astronomical Association, Director Mark Percy of the Williamsville Space Lab Planetarium, and meteorologist Don Paul with weather advice.

Michael Grenier, RAS President



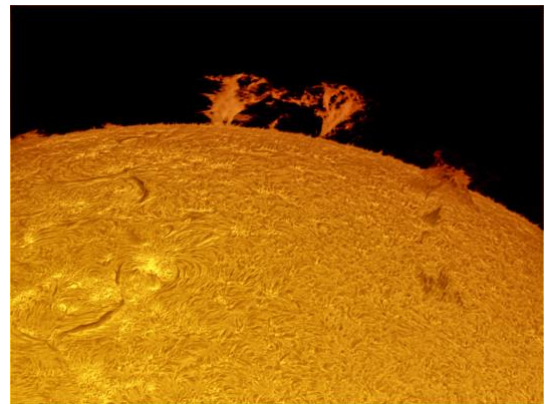
Annular eclipse sequence, October 14, 2023 from Weatherford, Texas. Photo: Kevin Pierce



Annular eclipse, October 14, 2023 from San Antonio, Texas. Photo: Chris Elder.



Astronomical Observatory, Monte Albán, Oaxaca, Mexico. Constructed ~1000BC, aimed at the rising point of Capella at that time, pentagonal shaped like Auriga. Photo: Bob Crumrine, 2023.



Solar prominences, Farash solar telescope, Oct 3, 2023. Photo: Doug Kostyk.

ABOUT THE ACADEMY

The Rochester Academy of Science™, Inc. is an organization that has been promoting interest in the natural sciences since 1881, with special focus on the western New York state region. Membership is open to anyone with an interest in science. Dues are minimal for the Academy and are listed in the [membership application online](#). Each Section also sets dues to cover Section-related publications and mailings. We are recognized as a 501(c)3 organization.

For information, contact President Michael Grenier at (585) 671-8738 or by email paleo@frontier.com.

The Academy Internet website is <http://www.rasny.org> or see us on Facebook at <https://www.facebook.com/Rochester-Academy-of-Science-792700687474549>.

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