



ORION Trapezium

June 2018 Volume 45, Issue 6

Who are we?

ORION was founded in April 1974, by a group of scientists at the United States Department of Energy facilities in Oak Ridge, Tennessee. Our original goal was to perform correlated, instrumented observations of atmospheric and astrophysical phenomena. Since then, we have expanded in many directions, including optical and radio astronomy and instrument design. Have a look at <https://orioninc.org> and <https://orionastronomy.wordpress.com/meetings/upcoming-meetings/>

What's Inside

June 2018 Meeting and Program	2
May 2018 Meeting and Program	3
Bays Mountain StarFest	4
About ORION	5

Future Events

ORION Meeting

Wednesday, June 20
Goff Health Sciences &
Technology Bldg., Room 104
Roane State Community College
Oak Ridge

TAO Public Stargazes

Saturday, June 2, 2018
Saturday, June 16, 2018
Roane State Community College
Tamke-Allan Observatory (TAO)
7:30 pm to 12:00 am
8:00 pm program
Look at
<http://www.roanestate.edu/obs/>

TAO Notes

ORION people are invited to arrive early (if announced on email) to prepare for evening viewing. Bring a telescope, red flashlight and munchies.
First time visitors – drive out before dark. Map available at
www.roanestate.edu/obs.visit.htm

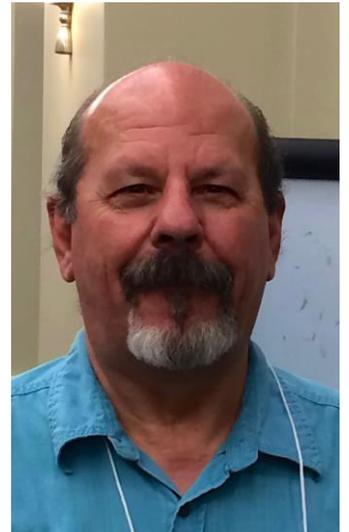
June 2018 Meeting

Wednesday, June 20, 7 PM, Goff Health Sciences and Technology Building,
Room 104, Roane State Community College, Oak Ridge

Presentation: Extended Space Charge Theory in Electrically Stressed Dielectric Liquids

Speaker: John C. Mannone

John C. Mannone is a retired nuclear electrical/nuclear chemical engineering consultant, and is interested in astrophysical plasmas, electromagnetic theory and the fusion of the arts with science. As a research chemist for Martin Marietta (Baltimore, MD), he worked on life detection systems aboard the Viking probes, as well as on accelerated aging of electro explosives used on the Voyager missions. Retired since 2010, Mannone remains active in astronomy outreach, where he is often sought out as a speaker. He developed a passion for the literary arts since 2004 and has well over 700 poems and prose published in journals such as *Poetry South*, *Blue Fifth Review*, *New England Journal of Medicine*, *Peacock Journal*, *Gyroscope Review*, *Baltimore Review*, *Pedestal*, *Pirene's Fountain*, *Event Horizon*, and *Eye To The Telescope*. He's the winner of the 2017 Jean Ritchie Fellowship in Appalachian literature. His third collection of poetry, *Flux Lines* (Celtic Cat Publishing), is due out in Spring 2018. Winner of numerous literary distinctions, he currently serves as the president of the Chattanooga Writers' Guild, chief credit analyst for Dragonfly Capital Solutions, and is the poetry editor for several journals including *Abyss & Apex*.



Abstract

Charge injection at a needle electrode in an apparatus to study the feasibility of an electrohydrodynamic flowmeter for dielectric fluids, like transformer oil, led to the observation of Landau-Slezkin flow. Also, the trajectory of entrained bubbles, used as markers in the oil, was observed. This led to the hypothesis of the formation of a macroscopic space charge layer, and subsequently to a theoretical formulation that extended the Debye-Huckle theory of space charge formation in electrolytes to electrically stressed dielectric fluids.

May 2018 Meeting

Wednesday, May 18, 7 PM, Goff Health Sciences and Technology Building,
Room 104, Roane State Community College, Oak Ridge

Presentation: Microbes in Weird Places: What Life is Like Deep in the Earth

Speaker: Dr. Karen Lloyd, UTK Dept. of Microbiology

Dr. Karen G. Lloyd applies molecular biological techniques to environmental samples to learn more about microbes that have thus far evaded attempts to be cultured in a laboratory. She has adapted novel techniques to quantify and characterize these mysterious microbes while requiring minimal changes to their natural conditions. Her work centers on deep oceanic subsurface sediments, deep-sea mud volcanoes and cold seeps, terrestrial volcanoes and hot springs, serpentinizing springs, Arctic marine fjord sediments, and ancient permafrost. She is currently an Assistant Professor at the University of Tennessee, <http://lloydlab.utk.edu/>.



Abstract

We do not currently know how deep life extends into Earth's crust. A major discovery in the past few decades has been that microbial life is abundant and diverse deep into sediments and crust underneath the world's oceans. In addition, deeply-sourced fluids, which are often harshly acidic, basic, or hot, bubble up from the deep subsurface and bring with them many different kinds of microorganisms as well. Microbiologists have two strategies to learn about these microbes: 1) the traditional way where microbes are grown on petri dishes or in test tubes, and 2) the new way where natural samples are analyzed with the tools of molecular biology. The traditional way has given a great leaping-off point for such studies, but the new techniques have shown us that the vast majority of microbial life on Earth has yet to be discovered. I will talk about new discoveries we have made in my lab by applying these new techniques to deep subsurface sediments near the Mariana Trench, hot springs and the inside of volcanoes in Central America, and cold extremophiles at 79°N in the Arctic.

Bays Mountain StarFest 2018
Join us for a great 3-day astronomical weekend!

It is the 35th anniversary of the Bays Mountain StarFest and the theme is "Celebrating 200 Years of American Women in Astronomy!"

It is the 200th birth anniversary of noted American astronomer Maria Mitchell. Our celebration though, has more to do with women in astronomy today. What better way to do this then by having all of our keynote speakers be women who do astronomy!

The event is:

- October 12-14, 2018 and will be filled with all sorts of astronomical treats.
- A non-profit, three-day, astronomical convention/star gathering hosted by the Bays Mountain Astronomy Club and Bays Mountain Planetarium.
- Held at Bays Mountain Park & Planetarium, a City-owned park with 3,550 acres of nature preserve. We'll be at the beginning of fall colors and the air should be dry. What better way to spend a wonderful, long weekend!

Our keynote speakers are:

- Friday Night: Jennifer Sieben, Associate Instructor, Indiana University
- Saturday Morning: Patty Seaton, Planetarium Specialist, H.B. Owens Science Center, MD
- Saturday Evening: Caroline Simpson, Professor of Physics, Florida International University, Miami, FL
- Sunday Morning: Carolyn Collins Petersen, Science Writer, CEO, Loch Ness Productions

The event includes:

- Five scrumptious meals with yummy vegetarian options.
- A unique, custom T-shirt.
- The opportunity to sleep on Park premises at no extra cost. A discounted rate is also offered for the 4+ star MeadowView Marriott Resort located just down the road from the Park. Click [here](#) to make reservations at the special rate.
- Planetarium shows, observing, and much more!

For all the details, please visit:

<https://www.baysmountain.com/astronomy/astronomy-club/#starfest>

More About ORION

ORION is an amateur science and astronomy club centered in Oak Ridge, TN that was founded in April 1974 by a group of scientists at the United States Department of Energy facility in Oak Ridge, Tennessee. We serve Oak Ridge, Knoxville, and the counties of Anderson, Knox, and Roane.

ORION's mission is to support science research, teaching, and amateur astronomy in East Tennessee, and therefore we are closely associated with and support TAO by volunteering to host their public events, share our knowledge of the skies with a variety of telescopes, and help provide intellectually stimulating programs at the observatory. ORION works to share the wonders of the cosmos and the culture of science to people from all walks of life.

Members are scientists, engineers, technicians, and others with varied talents and expertise. Over half have telescopes, many are amateur radio operators, and some have a technical interest in astrophotography.

ORION has working relationships with several organizations, including museums and amateur astronomy groups.

Membership is open to individuals who will actively contribute their time and ideas. Our annual membership dues are \$20.00 and student discounts are available.

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Noah Frere

Jennifer Hartwig

Raj Jain

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