



ORION Trapezium

November 2017 Volume 44, Issue 11

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/>

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Future Events

ORION Meeting

Wednesday, November 15, 2017
1900 hours (7 pm)
Goff Health Sciences &
Technology Bldg., Room 104
Roane State Community College
Oak Ridge

TAO Public Stargazes

Saturday, November 18, 2017
Saturday, December 2, 2017
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

November 2017 Meeting and Program

Wednesday, November 15, 7 PM, Goff Health Sciences and Technology Building, Room 104, Roane State Community College, Oak Ridge



Presentation “The Problem with Aliens”

Speaker

Kenneth Roy is a retired (but still working) engineer living and working amidst the relics of the Manhattan Project in Oak Ridge, Tennessee. He invented the “Shell Worlds” concept. In 1997, he made the cover of the prestigious Proceeding of the U.S. Naval Institute for his forecast of anti-ship, space based, kinetic energy weapons. With his co-authors R.G. Kennedy and D.E. Fields, has appeared multiple times in the Journal of the British Interplanetary Society (JBIS) and Acta Astronautica with papers on terraforming and space colonization. He is a graduate of the Illinois Institute of Technology and the University of Tennessee at Knoxville. He enjoys reading science fiction and books on terraforming.

Abstract

Much effort has been expended on the search for habitable worlds. The unstated goal is to find a second Earth, another home for Humanity. But the problem with habitable worlds is that they are inhabited. Oxygen in the atmosphere will probably not exist without life of some sort releasing it as a waste product. Aside from the ethical issues, Earth life may not be compatible with alien life and attempts to colonize such worlds may not end well for Humans. All of life on Earth utilizes 21 very specific amino acids to build the proteins that form us. These amino acids are synthesized within the cells of living plants, animals, and fungi. Thus, the universe of amino acids that we are exposed to is limited to these specific amino acids. Earth DNA systems are tailored to direct the construction of useful proteins from these amino acids. There are some 300 naturally occurring and an estimated 3000 plus possible amino acids that could exist. Life that has evolved independently on a distant planet is likely to utilize some but not all of amino acids used by Earth life and will probably use amino acids not used by Earth life. Ingesting (and perhaps even slight contact with) these alien amino acids could disrupt the proper functioning of Earth based cells. The Panspermia Theory suggests that this might not be the case, with similar extremophiles being distributed throughout the universe. Or perhaps Earth cells have the ability to discard alien amino acids. These are open questions. It may be that when Humanity ventures to other solar systems, the search will not be for living alien worlds to colonize, but instead for suitable sterile worlds that can be transformed over time into a true second Earth inhabited with life from Earth.

October 2017 Meeting and Program

We had our first meeting at our new location – the Golf Bldg. at Roane State, Oak Ridge Campus. The projector worked great!

Thanks to David Fields for reviewing the latest Astronomy Discoveries and the direction of research, and to everyone who participated in some great discussions about how ORION might move with the next year of program topics.

ORION President's Perspective What if China Makes First Contact

David Fields

Have a look at this article, "What Happens if China Makes First Contact?", just published in The Atlantic Monthly.

<https://www.theatlantic.com/magazine/archive/2017/12/what-happens-if-china-makes-first-contact/544131/>

The article may be light reading, but it is heavy in importance.

I've, of course, been following the Chinese advance into radio astronomy (a topic that I personally enjoy). They take long strides, just as they have done in supercomputing, superconductivity, and aeronautics. Their design of a single-dish telescope, several times larger than the radio dish at Arecibo, Puerto Rico (now damaged by Hurricane Maria) has seemed a bit old-style to me, since it doesn't bring to bear the agile, multi-source, and beam-forming capabilities of an array. But I think I now understand what they have done -- they have brought their computers to bear on weak signal extraction and analysis -- just what one needs, if not to discover a signal modulated by sophisticated means, then to focus the weak radio energy and understand it.



They accomplished quite a task -- to build this type of instrument in a crowded world. Current thinking is that it's a better investment to focus and analyze somewhat higher frequencies than their dish will handle, but their accomplishment is still significant. They are still working on the instrumentation, but initial data has been received, and is being analyzed by their computers.

SETI is a task like exploring a frontier that has a boundary shrouded in fog. We haven't properly touched the boundary with our instruments. But the topic is important, and the Breakthrough Initiatives, are SETI-related: consider Breakthrough Listen, Breakthrough Listen, and Breakthrough Starshot. If you haven't heard of these, then check them out with a Google search.

What is the Tennessee Valley Interstellar Workshop (TVIW) doing about SETI? That's a good question for us, since our November meeting presentation features Ken Roy, who spoke on this topic at TVIW recently.

We cover a lot of topics in our TVIW conferences, such as the one in Huntsville on October 3-6. In our 2011 and 2013 TVIW Symposia, I seemed to be the only person mentioning SETI. In 2014, existence of many Earth-like planets had been confirmed, and TVIW enjoyed an awesome Kepler exoplanet search presentation by Sara Seager. That was also the year that my friend Paul Shuch and I gave a 2-person presentation of a broader picture of radio SETI. In 2016 and 2017 I contributed radio astronomy posters with a SETI connection.

I think that 2017 is the year that TVIW finally focused attention on SETI. Prominent SETI researcher Andrew Siemion was the guest speaker, and he presented a powerful review of current SETI efforts:

"Thursday night brought everyone to the US Space and Rocket Center for German food under the Saturn V. Then Andrew Siemion spoke on 'The Search for Ourselves Among the Stars', as part of the Pass the Torch lecture series. A wonderful talk in an energizing atmosphere."
<https://tviw.us/tviw-2017/>

The views of TVIW guest speaker Siemion are featured in the Atlantic Monthly article, along with those of the immensely creative SF writer, Liu Cixin. Reading his books didn't me feel comfortable, but I appreciated them nonetheless.

As mentioned above, this month's ORION meeting will feature speaker Ken Roy. Ken covered his topic at the October 2017 TVIW meeting, and that's another TVIW connection.

Commented [LF1]: Duplicate?

Outreach and Education

Tellico Village Astronomy Club

The November meeting featured a great presentation on Stellar Evolution by fellow club member Glenn Kinnear. Glenn holds a Masters degree in Physics from Virginia Tech and was a graduate teaching assistant in undergraduate astronomy labs. He presented an overview of stellar life star formation, structure, stellar events and the end of a star's life.

He is currently working as a contractor for the US Navy performing programming, cyber security, and computer visualizations. He likes to combine his interests in astronomy and computers towards remote control and automation of telescopes and astrophotography.

Library Telescope Lending Program

The Loudon County Library at Tellico Village has established a program to loan 4.5in Starblast telescopes to Library patrons. According to library manger Carol Deforest the program launched with no glitches. The Tellico Astronomy Club and the Knoxville Observers provide technical support to the program.

Tellico Village Astronomy Club Visits TAO

As reported last month, everyone enjoyed the visit of the Club to TAO. Other visits are anticipated! Thanks to Roy Morrow for arranging the visit. (Note added by David)

Where's my Trapezium?

The easy answer is that you're looking at it. But it's shorter than normal, for several reasons. Basically, we didn't have many submissions. So please (as several of you have promised) write up something about astronomy and share it.

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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