# Virtual Joint Nuclear and Astrophysics Seminar

- When: Friday January 28th at 12:00 PM Central Time
- Where: ZOOM (for the link e-mail barbui@comp.tamu.edu)
- Speakers: Alessandro A. Oliva and Guang Yang

**Studying neutron induced reactions of astrophysical interest by the means of the Trojan Horse Method (THM): the $^{17}O(n, \alpha)^{14}C$ as an s-process poison.**

By Alessandro A. Oliva, Laboratori Nazionali del Sud, Catania, Italy

Neutron induced reactions are fundamental for the nucleosynthesis of elements in the universe: indeed, most of the nuclei beyond the iron peak are produced by either the s-process or the r-process. The study of such reactions is however still a challenging task even for today's standards, since working with neutrons requires significant experimental and technological efforts. Therefore, a more viable alternative could be using an indirect method such as the Trojan Horse Method since it does not require either the production or the detection of neutrons.

The $^{17}O(n, \alpha)^{14}C$ reaction is one of the so-called neutron poisons for the s-process and it could play an important role in the balance of the neutron abundance in that particular astrophysical environment. The reaction was investigated in the energy range of astrophysical interest by applying the THM to the three body reaction $^{2}H(^{17}O, \alpha^{14}C)H$. In this talk, after a brief introduction on the method, the experiment will be discussed and the preliminary results of the data analysis will be presented.

**What can we learn from JWST?**

By Guang Yang, Texas A&M University, College Station, TX.

JWST has been successfully launched. The onboard MIRI instrument, covering 5-28 μm, will revolutionize extragalactic astronomy by providing unprecedented sensitivity to the emission from polycyclic-aromatic-hydrocarbon and AGN-heated dust in distant galaxies.

I will talk about our work that simulates realistic MIRI imaging. In this work, we assess the potential of MIRI photometry to constrain properties of galaxies in the Cosmic Evolution Early Release Science (CEERS) survey. We extract PSF-matched photometry from the simulated data, and fit the source SEDs with X-CIGALE, simultaneously modeling the photometric redshift and other physical properties. Adding the MIRI data, the accuracy of both the redshift and frac_AGN (fractional AGN contribution to total IR) is significantly improved for sources at $z<\sim3$. The simulated CEERS MIRI data are slightly more sensitive to AGN detections than the deepest X-ray survey, based on the empirical L_X-L_6μm relation. Like X-ray observations, MIRI can also be used to constrain the AGN accretion power (accuracy $\approx$ 0.3 dex)