Contribution ID: **312** Type: **Oral report**

At the intersection between machine learning and nuclear astrophysics: a cGAN framework for helium reaction modeling

Thursday 23 September 2021 18:35 (25 minutes)

While the field of nuclear astrophysics has recently been a burgeoning area of study and research, there is still a significant portion of information regarding the topic that is not known to science. In particular, while certain foundations of the subject area seem plausible, there is not currently any proof that helium fusion is a key component that drives nuclear astrophysics. In this work, we take an innovative approach by training generative adversarial networks (GANs), which are a machine learning-based algorithm, to model the progression of helium reactions. The cGAN architecture is utilized. We hope that this work will provide insights into the underpinnings of nuclear astrophysics by providing an automated environment for its study.

Primary author: CHEN, Thomas (Academy for Mathematics, Science, and Engineering)

Presenter: CHEN, Thomas (Academy for Mathematics, Science, and Engineering)

Session Classification: Section 5. Neutrino physics and astrophysics

Track Classification: Section 5. Neutrino physics and astrophysics.