MACHINE LEARNING FOR ASTROPHYSICS
2ND EDITION CATANIA, 8-12 JULY, 2024

Contribution ID: **181** Type: **Oral Presentation**

Detection of Galaxy Tidal Features using Self-Supervised Machine Learning

Tuesday, 9 July 2024 10:20 (20 minutes)

Low surface brightness substructures around galaxies are a valuable tool in the detection of past or ongoing galaxy mergers. The properties of these substructures, along with the properties of their host galaxy, can tell us about a galaxy's past interactions and the evolution of galaxy populations. In order to draw accurate and statistically robust conclusions about this evolution process, we require a large sample of galaxies exhibiting tidal features. In this talk I will present promising results from a Self-Supervised Machine Learning Algorithm, trained on Hyper Suprime-Cam Subaru Strategic Program (HSC-SSP) data, that can be used to automate the detection of large samples of galaxies possessing low surface-brightness tidal features. Automating tidal feature detection will drastically increase the speed at which large samples can be assembled. I will describe the methods involved in isolating these galaxies and how the same methods can be applied to larger future surveys like Rubin Observatory's Legacy Survey of Space and Time. The algorithm has been applied to ~37,000 galaxies drawn from the HSC-SSP Ultradeep survey. I will present our analysis of this tidal feature sample.

Presenter: DESMONS, Alice

Session Classification: Past and future multiwavelength all-sky surveys