

Unveiling Rare Astrophysical Events in the Fink Broker

Wednesday, May 8, 2024 9:00 AM (30 minutes)

The detection of new astronomical events is one of the most anticipated outcomes of the next generation of large-scale sky surveys. Experiments such as the Vera Rubin Observatory Legacy Survey of Space and Time are expected to continuously monitor large areas of the sky with remarkable deliberation, which will undoubtedly lead to the detection of unforeseen astrophysical phenomena. At the same time, the volume of data gathered every night will also increase to unprecedented levels, rendering serendipitous discoveries unlikely. In the era of big data, most detected sources will never be visually inspected, and the use of automated algorithms is unavoidable. I would like to present the anomaly detection module developed for the Fink community broker –one of the official LSST brokers –to search for unusual astrophysical events in the Zwicky Transient Facility alert stream and LSST in future. I will present the first discoveries made with the module including AT2023awt –rare subtype of AM CVn variables, SN 2023mtp –supernova with a precursor. The spectral and photometric follow-up observations of AT2023awt and SN 2023mtp will be discussed. Other discoveries like fast transients, supernova candidates and cataclysmic variables will be presented. I will also introduce the Fink anomaly detection bot for Slack and Telegram, as well as the active anomaly detection that has been recently implemented to make the search for anomalies more efficient.

Presenter: Dr PRUZHINSKAYA, Maria (LPCA)

Session Classification: Keynote speakers