NEB - 21
Corfu September 1-4, 2025

Contribution ID: **52**                                                            Type: **talk**

# Importance of Noise Filtering for Improving the False Alarm Rate in Gravitational Wave Events

*Wednesday 3 September 2025 12:30 (20 minutes)*

We used AresGW, a deep residual neural network for gravitational wave detection, to process O3 data from the two LIGO detectors, generating a list of triggers with high significance. To improve the false alarm rate, we also used Gravity Spy, a convolutional neural network designed to identify glitches. We processed ARESGW triggers by removing those that were common between the two networks. Filtering out these common triggers, together with other filtering techniques employed in AresGW, was important to reduce the false alarm rate of several new candidate events, the first to be identified by a machine-learning pipeline.

**Primary author:**   KOURSOUMPA, Evdokia Chrysovalanti (Aristotle University of Thessaloniki)

**Co-author:**   Prof. STERGIOULAS, Nikolaos (Aristotle University of Thessaloniki)

**Presenter:**   KOURSOUMPA, Evdokia Chrysovalanti (Aristotle University of Thessaloniki)

**Session Classification:**   Morning