

## Distributional methods for detecting Gravitational Waves from Core-Collapse Supernova

*Thursday 24 July 2025 16:30 (20 minutes)*

The goal of the project is to investigate the potential of different distributional methods in the detection of Core-Collapse supernova gravitational waves (GW) for quiet signals that would have been previously missed. To date, no supernova GW detections have been made. We use coherent WaveBurst to look at the loudest events in a span of time and form a metric for each event, which we collect to form ‘shaped’ distributions containing the signal and all the loud noise. Our method focuses on applying non-parametric distributional tests to separate noise-only distributions with those containing our GW signal. With an understanding of the behavior of these tests and tuning parameters, we have a method to search for supernova GW at signals much quieter (and therefore farther away) than ever before possible.

**Primary authors:** MIYOKO, Alani (Embry-Riddle Aeronautical University); SCHLUTERMAN, Kya (University of Tennessee Knoxville); ZANOLIN, Michele (Embry-Riddle Aeronautical University, Prescott)

**Co-author:** SZCZEPANCZYK, Marek (University of Warsaw)

**Presenter:** SCHLUTERMAN, Kya (University of Tennessee Knoxville)

**Session Classification:** Detection