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G-mode slope estimation from gravitational waves produced by Core Collapse Supernovae MICHAEL BENJAMIN, MICHELE ZANOLIN, JOSHUA FREED, Embry-Riddle Aeronautical University, MAREK SZCZEPANCZYK, University of Florida, MANUEL DAVID MORALES, University of Guadalajara — Gravitational wave physics is one of the newest and most unknown fields of physics in the modern day. The analysis of raw interferometric data has specific problems that require new research order to extract and interpret the astrophysical information. In this project, we will be assessing the capacity to characterize vibrational modes of Neutron stars forming at the center of a core collapse supernova, which are called g-modes, and specifically tracking the early slope and the late slope of the g-mode in the presence of noisy interferometric data. The g-mode of a supernova is one of three modes of oscillation that a proton-neutron star experiences when it goes supernova and is the dominant one in the LIGO signature band. The primary tool that will be used is a software package called Adaptive Wavelet Clustering. We will be using this clustering algorithm to find a least square fit to the curve of the g-mode. Adaptive Wavelet Clustering is a novel clustering technique produced by Chen et al. described in the paper "Adaptive Wavelet Clustering for Highly Noisy Data."

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