

Abstract Submitted  
for the FWS19 Meeting of  
The American Physical Society

**Probing the Initial Mass Function with the Rate of Supernovae in Voids**<sup>1</sup> KAELYN DAUER, California State University Fresno, SEGEV BENZVI, KELLY DOUGLASS, University of Rochester, CYNTHIA OLVERA PEREZ, California State University Chico — We compare the rate of supernovae in void galaxies to that in galaxies in denser regions to discern if there is an environmental dependence on the initial mass function. We use core collapse supernovae from the Open Supernova Catalog that are within the SDSS DR7 footprint to study the supernova rate in voids and in denser regions using VoidFinder, a leading void identification algorithm that filters out faint and isolated galaxies to grow void spheres in empty regions of the cosmic web. We use the absolute magnitudes from SDSS DR15 to look at void galaxies and galaxies in denser regions of comparable mass to determine the rate of supernovae in both environments. We find that void galaxies have higher supernovae rates than galaxies in denser regions. Possible explanations for this result include a top-heavy IMF in void galaxies and an environmental dependence on cosmic downsizing.

<sup>1</sup>This material is based on work supported by the National Science Foundation under Award No. PHY-1757062 and No. AST-1559559, a PAARE Grant for the California Minority Partnership for Astronomy Research and Education (CAMPARE). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

Kaelyn Dauer  
California State University Fresno

Date submitted: 21 Oct 2019

Electronic form version 1.4