

Abstract Submitted
for the PSF20 Meeting of
The American Physical Society

The rare, galaxy cluster environment of the short GRB161104A and a comparison to the short GRB host population¹ ANYA NUGENT, Northwestern University — Short gamma ray bursts (SGRBs; $z \sim 0.1-2$) provide unique cosmological analogs to local binary neutron star mergers detected by gravitational wave facilities. In particular, their host galaxies allow us to uniquely constrain the progenitor systems based on their parent stellar population properties. Here, I discuss one rare instance of an SGRB (161104A) uncovered in a faint galaxy cluster at $z \approx 0.8$. I fit deep optical and near-infrared observations of its host with state-of-the-art galaxy models to determine its stellar population properties, such as mass, age, metallicity, dust extinction, and star formation rate. I compare these results to the stellar population properties of 20 more SGRB hosts, three of which are also in galaxy clusters, and also place accurate constraints on the masses and ages of this sample. Lastly, I determine a lower limit on the fraction of SGRBs in clusters: $\approx 5 - 13\%$, and compare several observational properties of the SGRBs associated with clusters, finding that they are more offset and have fainter afterglows than the rest of the population, thus potentially linking them to unique progenitor dynamics affected by the cluster environment.

¹Henry Luce Foundation

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Date submitted: 26 Oct 2020

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