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A Search for High-energy Gamma-ray Emission from Superluminous Supernovae PAZIT RABINOWITZ, Barnard College Department of Physics and Astronomy, DEIVID RIBEIRO, BRIAN METZGER, Columbia University Department of Physics, MATT NICHOLL, University of Birmingham School of Physics and Astronomy, INDREK VURM, Tartu Observatory, VERITAS COLLABORATION — Superluminous Supernovae (SLSNe) are a rare class of supernova with luminosity 100-1000 times greater than standard supernovae. It is still unknown exactly what powers SLSNe, though different models have been proposed for both Type I (hydrogen poor) and Type II (hydrogen rich) SLSNe, such as powering by a central engine or interactions with circumstellar material. Studying emission from these objects can help constrain the models and provide a better understanding of what makes these supernovae so optically bright. This project studied high-energy gamma-ray emission (600 MeV to above 300 GeV) from two SLSNe by performing binned likelihood analyses of data from the Fermi-LAT, in support of a study of the same sources using data from VERITAS in the 200 GeV to 10 TeV energy range. Both SN2015bn and SN2017egm are Type I SLSNe, which are predicted to be powered by a central compact object. No gamma-ray emission was detected from either source in this energy range, but upper limits on flux and luminosity were derived.

Pazit Rabinowitz
Barnard Coll

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