Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Extragalactic Magnetar Giant Flares are a Source of Gamma-Ray Bursts ERIC BURNS, Louisiana State University — Cosmological gamma-ray bursts (GRBs) are flashes of high-energy radiation from the distant universe. They are known to arise from two distinct progenitor channels: short GRBs predominantly from neutron star mergers and long GRBs from a rare type of core-collapse supernova (CCSN) called collapsars. Highly magnetized neutron stars called magnetars also generate energetic, short-duration gamma-ray transients called Magnetar Giant Flares (MGFs). Three have been observed from the Milky Way and its satellite galaxies and they have long been suspected to contribute a third class of extragalactic GRBs. We report the unambiguous identification of a distinct population of 4 local (¡5 Mpc) short GRBs, adding GRB 070222 to previously discussed events. While identified solely based on alignment to nearby star-forming galaxies, their rise time and isotropic energy release are independently inconsistent with the larger short GRB population at ¿99.9% confidence. These properties, the host galaxies, and non-detection in gravitational waves all point to an extragalactic MGF origin. Despite the small sample, the volumetric rates place MGFs as the dominant gamma-ray transient detected from extragalactic sources. These rates imply that some magnetars produce multiple MGFs, providing a source of repe

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Date submitted: 07 Jan 2021 Electronic form version 1.4