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Search of local analogs of GRB 170817 with Swift

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A local population of faint short gamma-ray bursts (GRBs) with late afterglow onset and bright optical kilonova was revealed by the discovery of the first binary neutron star merger GW170817/GRB170817A. In our work we investigate whether similar nearby (<200 Mpc) events were observed by NASA's Neil Gehrels Swift observatory. We selected all the events not associated to any X-ray or optical counterpart, finding 4 cases possibly associated with galaxies at distance <200 Mpc. Although affected by low statistics, this number is higher than the one expected for chance alignments to random galaxies, and possibly suggests a physical association between these bursts and nearby galaxies. We discuss the nature of these objects, and use them to constrain the rate of local SGRBs. By comparing our inferred rates with the most recent results from the Advanced LIGO and Virgo O3 run we derive information about the outflow collimation and its structure.

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