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Stacking search for muon neutrinos from Gamma-Ray Bursts with ANTARES neutrino telescope using 2007 to 2017 data

Addressing the origin of the observed diffuse astrophysical neutrino flux is of paramount importance. In this context, Gamma-Ray Bursts (GRBs) are considered interesting candidate sources since they are potentially able to achieve the energetics required to reproduce the neutrino flux.

Using ANTARES data with the aim of constraining the contribution from the GRB population to the high-energy diffuse flux, we conducted a stacking search for upgoing muon neutrinos in spatial and temporal coincidence with 784 GRBs that occurred in the years 2007 to 2017.

Since no coincident neutrinos have been observed, we constrain the contribution of these GRBs to the observed diffuse astrophysical neutrino flux.

We also evaluate the systematic uncertainties on our estimate of the diffuse neutrino flux, as connected to the theoretical modeling of photo-hadronic interactions in these sources.

Mini-abstract

GRB stacking search with 10 years of ANTARES data.

Experiment/Collaboration

ANTARES Collaboration

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