



Contribution ID: 48

Type: not specified

## IceCube search for neutrinos from GRB 221009A

*Monday, 3 July 2023 16:45 (15 minutes)*

Gamma-ray bursts (GRBs) have long been a promising candidate for neutrino emission, with different theoretical models predicting neutrino fluxes across a large range of energies. While correlations between GRBs and neutrinos have yet to be found, GRB 221009A is an exceptionally interesting target for neutrino searches. As the brightest GRB ever observed and the first with  $>10$  TeV photons, GRB 221009A gives us a unique opportunity to probe GRB neutrino emission. Using a variety of methods, applying different time windows and specializing for the different energy ranges, IceCube has been able to search for neutrinos ranging from MeV to PeV energies from GRB 221009A. These methods include looking for the photo-multiplier rates scalars usually reserved for MeV supernova neutrinos, to looking for an increase in GeV event rates inside DeepCore, to using traditional point source methods for searches from 10 GeV to 1 TeV with DeepCore and  $> 1$  TeV with the full IceCube detector. With these different methods of neutrino observation it is possible to cover 9 orders of magnitude in neutrino energy, placing stringent limits on the neutrino emission of the brightest ever observed GRB.

**Primary authors:** KRUISWIJK, Karlijn (UCLouvain); VALTONEN-MATILA, Nora (Uppsala University); THWAITES, Jessie (University of Wisconsin - Madison); BRINSON, Bennett (Georgia Tech); PROCTER-MURPHY, Rachel (University of Maryland)

**Presenter:** KRUISWIJK, Karlijn (UCLouvain)