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Neutrino Messages from Gamma Ray Bursts

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The mystery of where and how Nature accelerates the highest energy cosmic rays (up to 10^{20} eV) is still unresolved a century after their discovery. Energetics considerations predict on the order of 10 neutrino detections per kilometer squared per year pointing back at the sources of cosmic rays. Gamma ray bursts (GRBs) have been postulated as one of the more plausible sources of extragalactic cosmic rays and thus high energy neutrinos. The idea of a kilometer scale neutrino telescope is now becoming a reality at the South Pole with the construction of IceCube. Detection of extraterrestrial high energy neutrinos will open new avenues in astrophysics and neutrino physics. A positive observation of neutrinos in coincidence with a GRB would identify these objects as one of the sources of the highest energy cosmic rays and would provide invaluable information about the processes responsible for GRBs. In this presentation I summarize the results from searches for neutrinos from GRBs and similar phenomena with IceCube and its predecessor, AMANDA. I review the status of the construction and operation of IceCube. Finally, I outline future directions for IceCube, in particular concerning multi-messenger studies of GRBs.