## Abstract Submitted for the MAS16 Meeting of The American Physical Society

Search for Galactic PeV Gamma Rays with IceCube Neutrino Observatory<sup>1</sup> HERSHAL PANDYA, Univ of Delaware, ICECUBE COLLABO-RATION — IceCube has detected an isotropic flux of astrophysical neutrinos but their sources are not yet known. Photons from neutral pions accompany neutrinos at production. PeV photons can only travel a short distance,  $\mathcal{O}(\infty t \parallel \text{,} \text{,})$ , before attenuating. Hence, PeV photons from the same direction as high energy neutrinos would indicate Galactic origin for those neutrinos. IceTop, the surface component of IceCube Neutrino Observatory detects extensive air showers (EAS) initiated by cosmic rays and gamma rays in the energy range of PeV to EeV. Gamma ray EAS have characteristic properties such as fewer muons, lesser fluctuations, and a more curved shower front relative to cosmic ray EAS. Using IceTop observables we calculate a Log Likelihood Ratio of two hypotheses, one that a given event is a gamma ray and another that it is a cosmic ray. Along with IceTop, high energy muons from EAS also trigger the IceCube detector. Gamma ray EAS leave none or a relatively smaller signal in IceCube. We use the distribution of LLH Ratio and the IceCube signal, in a two parameter space, to discriminate gamma rays from cosmic rays. In this conference contribution, we present the capability of this method in terms of best signal to background ratio attainable.

<sup>1</sup>Research supported in part by NSF Grant PHY-1505990.

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Date submitted: 19 Sep 2016

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