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10-300 TeV Isotropic Diffuse Gamma-rays with the GRAPES-3 Experiment

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Diffuse gamma-ray emission by interactions of ultra-high-energy cosmic rays (UHECRs) with the 2.7K cosmic microwave background (CMB) is expected to have an isotropic distribution around 10—100 TeV. This radiation carries the information on the distribution of energetic sources and hence the cosmological evolution of the universe. The GRAPES-3 array comprises ~ 400 densely packed scintillator detectors deployed over an area of 25,000 m^2 and a large area tracking muon telescope (560 m^2). The muon telescope has the ability to differentiate the gamma-rays from charged cosmic rays through their muon content. Based on the data measured by the GRAPES-3 experiment, we place 90% C.L. upper limits on the intensity of gamma-rays relative to cosmic rays at energies from 10–300TeV.

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