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Cosmic-ray anisotropy studies with the IceCube, IceTop and AMANDA detectors MARCOS SANTANDER, University of Wisconsin, Madison, ICECUBE COLLABORATION — The IceCube neutrino observatory can detect energetic muons originating from cosmic ray interactions with the atmosphere at a rate of about 2 kHz. The integration of such a high muon rate over the last five years provide us with a data sample of several billion cosmic-ray events with typical energies between 20 and 400 TeV. The size of this sample, combined with the good angular resolution of the detector, has allowed us to observe a significant anisotropy in the arrival direction of cosmic rays in the southern sky. This anisotropy is characterized by a large scale structure of per-mille amplitude accompanied by structures with smaller amplitudes and with typical angular sizes between 10° and 20°. Combining the IceCube data set with data gathered by the IceTop air shower array and the AMANDA neutrino telescope, which operated between 2000 and 2007, has enabled us to expand the search for anisotropy to higher energies, and also to look for time variability in the observed anisotropy at TeV energies.

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