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Moon shadow observation with the ANTARES neutrino telescope

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The ANTARES detector is the largest neutrino telescope currently in operation in the North Hemisphere.

One of the main goals of the ANTARES telescope is the search for point-like neutrino sources. For this reason both the pointing accuracy and the angular resolution of the detector are important and a reliable way to evaluate these performances is needed.

One possibility to measure the angular resolution and the pointing accuracy is to analyse the shadow of the Moon, i.e. the deficit in the atmospheric muon flux in the direction of the Moon induced by absorption of cosmic rays.

Analysing the data taken between 2007 and 2012, the Moon shadow is detected with about 3σ significance in the ANTARES data.

The first measurement of the ANTARES angular resolution and absolute pointing for atmospheric muons using a celestial calibration source is obtained. The presented results confirm the good pointing performance of the detector as well as the predicted angular resolution.

Collaboration

ANTARES

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