

A measurement of the diffuse astrophysical muon neutrino flux using six years of IceCube data

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The IceCube Collaboration has observed a high-energy astrophysical neutrino flux using neutrino candidates with interaction vertices contained within the instrumented volume. A complementary measurement can be done with charged current muon neutrinos where the interaction vertex can be outside the instrumented volume. Due to the large muon range the effective area is significantly larger but the field of view is limited to the northern hemisphere. IceCube data from 2009 through 2015 have been analyzed by a likelihood approach with reconstructed muon energy and zenith angle as observables. The analyzed data consist of about 340,000 muon neutrino candidates with a negligible contribution of atmospheric muons. While the majority of these events are atmospheric neutrinos, the highest energy events are incompatible with that interpretation. In this talk we will present the observation of an astrophysical muon neutrino flux and the measurement of its properties.

Primary authors: Mr RÄDEL, Leif (RWTH Aachen, 3. Physikalisches Institut B); Mr SCHOENEN, Sebastian (RWTH Aachen, 3. Physikalisches Institut B)

Presenter: Mr SCHOENEN, Sebastian (RWTH Aachen, 3. Physikalisches Institut B)

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