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# Updated Earth Tomography Using Atmospheric Neutrinos at IceCube

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The IceCube Neutrino Observatory has observed a sample of high purity, primarily atmospheric, muon neutrino events over 11 years from all directions below the horizon, spanning the energy range 500 GeV to 100 TeV. While this sample was initially used for an eV-scale sterile neutrino search, its purity and spanned parameter space can also be used to perform an earth tomography. This flux of neutrinos traverses the earth and is attenuated in varying amounts depending on the energy and traversed column density of the event. By parameterizing the earth as multiple constant-density shells, IceCube can measure the upgoing neutrino flux as a function of the declination, yielding an inference of the density of each shell. In this talk, the latest sensitivities of this analysis and comparisons with the previous measurement are presented. In addition, the analysis procedure, details about the data sample, and systematic effects are also explained. This analysis is the latest, weak-force driven, non-gravitational measurement of the earth's density and mass.

## Collaboration(s)

IceCube

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