

Earth for neutrinos, neutrinos for Earth

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(REMOTE)

Not only does Earth produce neutrinos, it also provides a medium for neutrinos to pass through. This has already led to the discovery of neutrino oscillations, and hence of neutrino masses. Further, Earth affects the oscillations of neutrinos propagating through it, a phenomenon that has been instrumental for precision measurements of neutrino mixing parameters. Future experiments with neutrino beams and observations of atmospheric as well as astrophysical neutrinos will exploit Earth matter effects extensively to look for new interactions of neutrinos. On the other hand, neutrino experiments are sensitive to the electron densities in the Earth matter they pass through. Measurements of oscillations and attenuation of neutrinos passing through Earth would be able to provide independent information on the internal structure of the Earth, such as the chemical composition, the core mantle boundary, the density jumps, etc.

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