

Geosciences for neutrino physicists: a primer

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Seismology uses energy from earthquakes and other seismic events to provide direct observations of Earth's interior, and constraints on its physical parameters. Seismic data are sensitive to velocity and attenuation properties, as well as density, anisotropy, and scattering. These measurements are employed in combination with output from geodynamical simulations and mineral physics experiments and calculations to infer mantle temperature and composition. Subsequently, we are able to map mantle features such as discontinuities and scatterers, track convection patterns and flow stagnation, and identify regions associated with geochemical reservoirs.

In this talk I will present an overview of the use of seismology for constraining Earth's mantle structure. I will summarise seismic data types and observations, introduce processing methodologies including tomography and coda-correlation, and review how seismology informs our understanding of mantle thermochemistry and dynamics via multidisciplinary approaches.

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