

Geotomography with solar and supernova neutrinos

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Este será um Journal Club com a discussão do artigo hep-ph/0502154, [Geotomography with solar and supernova neutrinos](#)

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Resumo do artigo:

We show how by studying the Earth matter effect on oscillations of solar and supernova neutrinos inside the Earth one can in principle reconstruct the electron number density profile of the Earth. A direct inversion of the oscillation problem is possible due to the existence of a very simple analytic formula for the Earth matter effect on oscillations of solar and supernova neutrinos. From the point of view of the Earth tomography, these oscillations have a number of advantages over the oscillations of the accelerator or atmospheric neutrinos, which stem from the fact that solar and supernova neutrinos are coming to the Earth as mass eigenstates rather than flavour eigenstates. In particular, this allows reconstruction of density profiles even over relatively short neutrino path lengths in the Earth, and also of asymmetric profiles. We study the requirements that future experiments must meet to achieve a given accuracy of the tomography of the Earth.