



ID de Contribution: 29

Type: YSF (Young Scientists Forum)

Search for a sterile neutrino with the STEREO detector at ILL.

lundi 16 mars 2015 19:51 (5 minutes)

In 2011, a re-evaluation of the anti-neutrino spectrum emitted by nuclear reactors revealed a 6% deficit between the observed flux and the expected one. This anomaly is significant at 2.7sigmas and can be explain by a new oscillation at short range due to a light sterile neutrino, with parameter $\Delta m^2 = 0.1-1$ eV. The STEREO detector in construction at ILL will be the first ever to measure with precision the anti neutrino spectrum and flux at very short distance (9-11m) from the source of emitted neutrinos and it will be able to confirm or reject the existence of this light sterile neutrino. In this presentation I will introduce the relevant parameter to study the neutrino oscillation, the STEREO detector and its discovery potential.

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Classification de Session: Young Scientist Forum 1

Classification de thématique: Experiment