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## STEREO: search for a sterile neutrino at the ILL Grenoble reactor

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Interest in light sterile neutrinos has been recently revived by the so-called Gallium and reactor neutrino anomalies. In both of them, a deficit of detected neutrinos was observed with respect to the expectations. Both anomalies could be explained by the oscillations of a sterile neutrino introducing an additional  $\Delta m^2$  around  $1 \text{ eV}^2$ . Such oscillations should cause a tell-tale distortion of the neutrino energy spectrum, with the known L/E dependence of neutrino oscillations.

The STEREO experiment has been designed to exploit such a signature at short baselines, thus confirming or refuting the  $\Delta m^2 \simeq 1 \text{ eV}^2$  sterile neutrino hypothesis. The STEREO detector consists of six optically separated cells filled with

Gd-loaded liquid scintillator, where reactor anti-neutrinos are detected through their inverse beta decay, surrounded by an external blanket of non-loaded liquid scintillator. The experiment will be placed in early 2016 at the Institut Laue-Langevin (ILL) at Grenoble, next to one of the most compact nuclear reactors in operation, with detector commissioning and data taking starting soon afterwards. We present the experiment design, which has been finalised, its sensitivity, and the status of its preparation.

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