

Search for Sterile Neutrinos with the Borexino Detector

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Several observed anomalies in the neutrino sector could be explained by a fourth (sterile) neutrino with a squared mass difference in the order of 1eV^2 to the other three standard neutrinos. This hypothesis can be tested with an artificial MCi neutrino (Cr-51) or a kCi antineutrino (Ce-144/Pr-144) source deployed near or inside a large low background detector like Borexino. The SOX project (Short baseline neutrino Oscillation with BoreXino) aims for the detection of sterile neutrinos and will also allow to measure the neutrino magnetic moment, the electroweak mixing angle as well as the axial and vector coupling constants at low energy. This talk will summarize the SOX concept and will show the expected sensitivities for the three possible phases of the experiment.

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