

Status of the search for light sterile neutrinos at short baselines

From the discovery of the neutrino to the measurement of the last of the neutrino mixing parameters, nuclear reactors have proved indispensable in the study of these particles, of which much remains to be unveiled. Recent and past measurements using reactor neutrinos rely on the prediction of their spectrum, a non-trivial exercise involving ad-hoc methods and carefully selected assumptions. A discrepancy between predicted and measured fluxes at a short distance from reactors, known as reactor antineutrino anomaly, arose in 2011, prompting the birth of new experiments aiming to study neutrino oscillation at a very short baseline. Such anomaly can be in fact explained invoking the existence of a new sterile neutrino at the eV mass scale that participate in the neutrino mixing, an enticing hypothesis that ties to other anomalies already observed in the neutrino sector and opens a door for physics beyond the Standard Model. The speaker will present an overview of the most recent experimental results on the search for reactor neutrino oscillation at very short baseline, and their implication in our current understanding of the reactor antineutrino anomaly and the sterile neutrino hypothesis.

Working group

WG5

Primary author: Dr MINOTTI, Alessandro (Universita & INFN, Milano-Bicocca (IT))

Presenter: Dr MINOTTI, Alessandro (Universita & INFN, Milano-Bicocca (IT))

Session Classification: Poster session NB: do not use Safari; use Firefox, Chrome or Edge