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Exploring new physics at ESSnuSB+

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ESSnuSB is a next-to-next generation long baseline neutrino oscillation experiment which aims to the precise measurement of the CP-violation in the leptonic sector studying neutrino oscillation at the second atmospheric maximum. The unique features of this experiment provide a great environment where to search for tiny new physics effects in neutrino oscillation beyond the three neutrino framework. Several scenarios have been recently studied in the ESSnuSB context. Among them, we show in this poster the ESSnuSB capabilities to explore the new physics parameters space in presence of scalar Non-Standard Interactions (sNSI) between neutrinos and ordinary matter. In addition to long-baseline physics, the ESSnuSB+ project proposes to explore neutrinos at short baseline using different Near Detectors. In this poster we also discuss the performances of these detectors in constraining sterile neutrino parameters employing neutrinos coming from two different beams: a low energy monitored beam (LEMNB) produced by pion decays and a low energy beam produced by muons circulating in a muon storage ring (LEnuSTORM).

Poster prize

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