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Updated physics reach of the ESSnuSB project

ESSnuSB project is a design study for an upcoming accelerator-based neutrino oscillation experiment which will be driven by the ESS proton accelerator. The primary goal of this experiment is to measure the leptonic CP-violation phase with high precision at the second oscillation maximum. In this presentation, I will discuss the physics sensitivities of the proposed ESSnuSB experiment. In particular, I will discuss the improvement in the measurement of the leptonic CP phase with the updated event selection criteria within the standard three flavour scenario. In this context, I will also discuss its capability to measure neutrino mass hierarchy and octant of the atmospheric mixing angle. In addition, I will also discuss the capability of this experiment to probe two of the new physics scenarios which are (i) light sterile neutrinos and (ii) invisible neutrino decay.

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