

# The European Spallation Source neutrino Super Beam plus (ESSvSB+) Project

*Saturday 20 July 2024 15:45 (15 minutes)*

ESSvSB is a design study for a long-baseline  $\nu$ -experiment to measure the CP violation in the leptonic sector at the second neutrino oscillation maximum using a beam driven by the uniquely powerful ESS linear accelerator. The ESSvSB CDR showed that after 10 years, more than 70% of the possible CP-violating phase,  $\delta_{CP}$ , range will be covered with  $5\sigma$  C.L. to reject the no-CP-violation hypothesis. The expected precision for  $\delta_{CP}$  is better than  $8^\circ$  for all  $\delta_{CP}$  values, making it the most precise proposed experiment in the field. The recently started extension project, the ESSvSB+, aims in designing two new facilities, a Low Energy nuSTORM and a Low Energy Monitored Neutrino Beam to use them to precisely measure the  $\nu$ -nucleus cross-section in the energy range of 0.2 –0.6 GeV. A new water Cherenkov detector will also be designed to measure cross sections and serve to explore the sterile neutrino case. An overall status of the project will be presented together with the ESSvSB+ additions.

## Alternate track

### I read the instructions above

Yes

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