

## The ESSnuSB conceptual design study

*Tuesday 22 May 2018 11:00 (20 minutes)*

The goal of ESSnuSB project is to discover and measure neutrino CP violation using a long-baseline oscillation experiment taking advantage of two recent opportunities. The first is the construction of the European Spallation Source, ESS, in Lund, which is planned to be the world's most intense proton source. The second is the recently measured large value of the oscillation mixing angle  $\theta_{13}$ . A consequence of this measurement is that placing the neutrino detector at the second neutrino oscillation maximum, instead of at the first, which primarily is the case for other proposed experiments, will lead to higher sensitivity in the measurement. The aim of the recently approved ESSnuSB H2020 Design Study is to provide the means for European physicists and accelerator engineers to perform a Conceptual Design Report for the ESSnuSB project, i.e. to investigate how investments already being made in the ESS research infrastructure can be used to further neutrino physics in Europe. An ongoing COST Action, CA15139, "Combining forces for a novel European facility for neutrino-antineutrino symmetry-violation discovery", recognizes the importance to have future neutrino facilities in Europe as well. In Sweden the Garpenberg mine is situated at a distance from ESS that corresponds to the second oscillation maximum and is thus proposed to be the location of the detector. In this presentation I will discuss the ideas behind the ESSnuSB project as well as the work that is planned to lead to the conceptual design report.

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