Contribution ID: **36** Type: **not specified**

The ESSnuSB project

Monday 27 January 2014 10:00 (20 minutes)

We are making a Design Study of a neutrino Super Beam long base line (500 km) experiment ESSnuSB based on the use of the European Spallation Source (ESS) 5 MW, 2 GeV proton linac and a Megaton water Cherenkov detector to discover leptonic CP violation, performing measurements at the second oscillation maximum, where the sensitivity to CP violation is significantly higher than at the first maximum and thereby making the CP angle measurement significantly less sensitive to systematic errors. Operation at the second maximum is made possible by the very high intensity of the ESS proton linac (1.6exp16 protons on target per year). An account is given of how the high intensity neutrino beam is generated using the ESS linac, of the properties of deep mines around 500 km from ESS that are possible sites for the neutrino detector and of the performance of the experiment for leptonic CP violation discovery.

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Session Classification: J-PARC and Beamline

Track Classification: Neutrino Beamline