2nd ESSnuSB open meeting

lundi 26 mai 2014 - mardi 27 mai 2014

CERN

Programme Scientifique

The meeting will give an overview of the status of the ESSnuSB project and the EU/Horizon2020 Design Study application under preparation.
The proposed ESSnuSB infrastructure consists of the ESS Linear Accelerator with some added components, an Accumulator and a Target located at ESS, that will be used to generate a very intense muon neutrino beam; a smaller neutrino Near Detector, located near ESS in Lund, used to monitor the neutrino flux; and a Megaton water Cherenkov neutrino Far Detector located in the Garpenberg mine in Dalarna, 540 km north of Lund, used to detect and identify electron-neutrinos that result from the oscillation of the muon-neutrinos generated at ESS. The simultaneous production of spallation neutrons using the ESS accelerator shall not be
reduced or affected in any other way. The water Cherenkov detector will also be used to measure neutrinos from supernovae, from the sun and from the atmosphere as well as to search for proton decay. The scientific aim of the infrastructure is the discovery and
measurement of CP violation in the leptonic sector, which is a necessary ingredient in any explanation of the observed dominance of matter over antimatter in the universe. The unique feature of the proposed infrastructure, as compared to the other major neutrino Super Beams proposed in the world, LBNE in the US, LBNO in Europe and Hyper-K in Japan, is the significantly higher power of the ESS proton accelerator, making possible to place the detector at the second oscillation maximum, where the relative amplitude of the leptonic CP violation signal is higher than at the first.