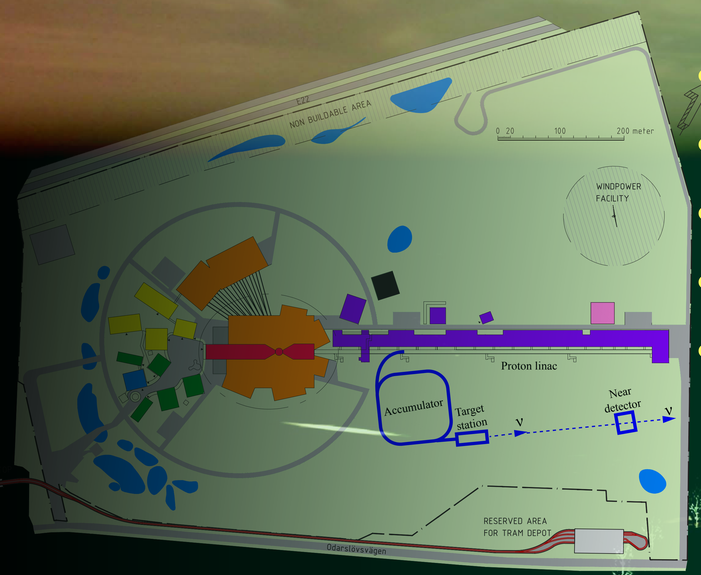
The ESSνSB Neutrino Oscillation Project

CP violation at the 2nd oscillation maximum

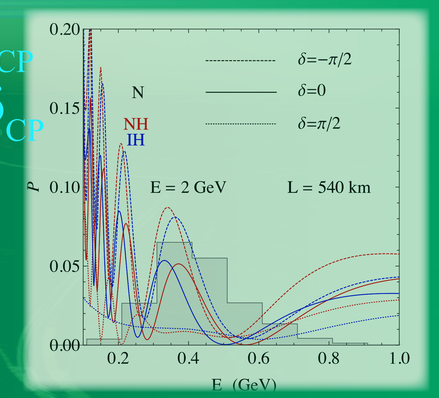


- 5 MW proton linac
- 2 GeV protons
- 14 Hz frequency
- ready by 2023
- location: Lund, Sweden

Matter/antimatter asymmetry

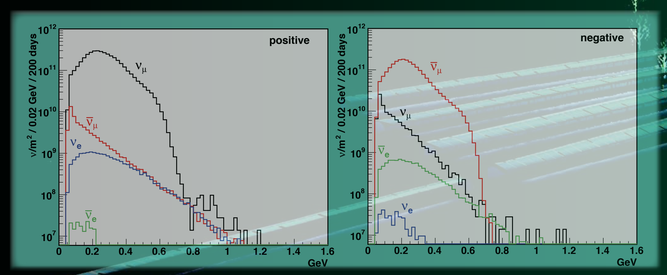
- 1st osc. max.: $\mathcal{A}=0.30\cdot\sin\delta_{CP}$
- 2nd osc. max.: $\mathcal{A}=0.75\cdot\sin\delta_{CP}$

(see arXiv:1310.5992)



European Spallation Source

Mton Water Cherenkov detector

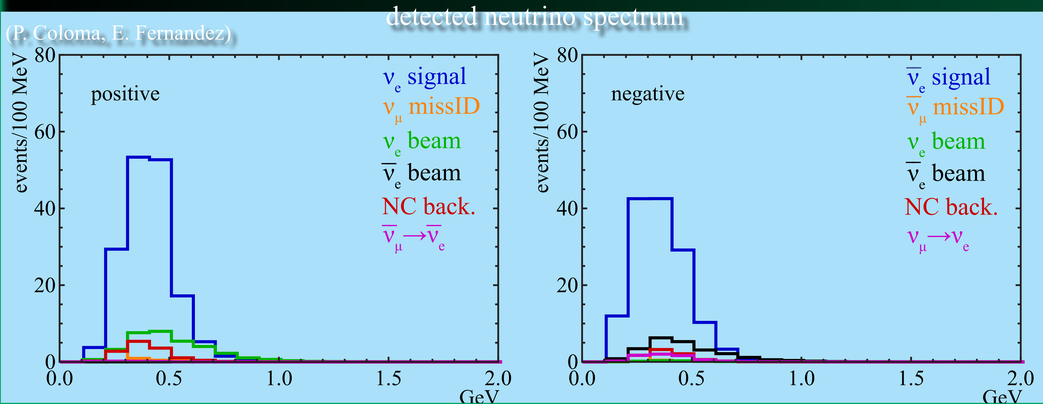


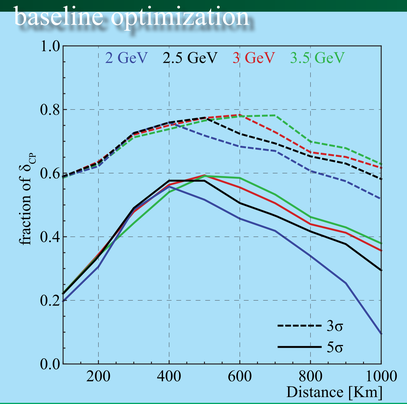
- 2 years with neutrinos (ν_μ)
- 8 years with anti-neutrinos
- $2.7\cdot10^{23}$ p.o.t./year

Physics Programme

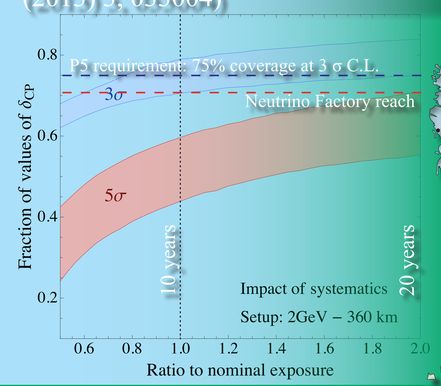
- CP violation
- Mass Hierarchy
- Proton decay
- Supernova neutrinos
- Solar and atmospheric neutrinos

(arXiv:1309.7022)





performance vs exposure
(for syst. errors see Phys. Rev. D 87 (2013) 3, 033004)



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