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Optimization of neutrino fluxes for european Super-Beams

The feasibility of a European next-generation very massive neutrino observatory in seven potential candidate sites located at distances from CERN ranging from 130 km to 2300 km, is being considered within the LAGUNA design study.

Neutrino fluxes to LAGUNA sites were calculated using a recently developed GEANT4 based simulation assuming a high intensity proton driver at 4.5 GeV (SPL) or 50 GeV (PS2). Several cross-checks of the simulation will be presented together with an optimization of the focusing system for each baseline. Physics performance (θ_{13} , CP violation, mass hierarchy) was also studied with the GLOBES software assuming for the far detector a 440 kton Water Cherenkov (MEMPHYS) or a 100 kton LAr TPC (GLACIER).

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