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The ESSnuSB Accumulator

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The 2.0 GeV, 5 MW proton linac for the European Spallation Source, ESS, would have the capacity to send extra pulses to a neutrino target, giving an excellent opportunity to produce a high performance neutrino beam, the ESS neutrino Super Beam (ESSnuSB). The neutrino target focusing system needs pulses shorter than a few micro-seconds. These short pulses will be formed in an accumulation ring, handling 2.86 ms long linac pulses with $1.1E15$ protons in each pulse.

One of the main challenges of this accumulator ring is the injection of the particles. H- stripping and painting is the method worked on presently. Some other ideas like lossless, multi-turn and multi-plane injection of protons could will also be investigated. The evolution of the beam distribution is studied during accumulation in order to make sure the beam characteristics meet the requirements from the extraction region, the transfer line and the target system. Simulation results and plans for future work on the accumulator design in view of the ESSnuSB design report will be discussed.

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