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Characterization of the Swiss Spallation Neutron Source as a Site for Neutrino Experiments

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Medium-energy, short-baseline neutrino experiments play a crucial role in testing both the Standard Model and physics beyond it. In recent years, pulsed neutron spallation sources have emerged as promising venues for such investigations. The Swiss Spallation Neutron Source (SINQ) at PSI presents another bright neutrino source, however, with almost continuous neutrino production due to the 50 MHz time structure of the proton beam. We outline a comprehensive roadmap toward a state-of-the-art computational characterization of SINQ as a potential neutrino experiment facility using Geant4.

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