

The HIBEAM/NNbar Experiment

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The existence of baryon number violating processes is a necessary condition to explain matter-antimatter asymmetry and may also play a role in accessing a hidden sector and addressing the question of dark matter. The construction of the European Spallation Source (ESS) provides a unique opportunity to exploit a high intensity beam of cold neutrons to perform searches for baryon number violation. The HIBEAM/NNbar experiment will search for neutron-antineutron and neutron-sterile neutron conversions with an improvement in sensitivity of several orders of magnitude compared to previous searches. HIBEAM is the first stage of the full-scale NNbar experiment planned to take place at a fundamental physics beamline at the ESS after 2026. This exploratory stage will facilitate the validation of detector technologies, the measurement of backgrounds *in situ*, and the development of background rejection methods. An overview of the HIBEAM/NNbar experiment along with the developments towards a prototype detector at Stockholm University are presented in this talk.

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