

Status of the HIBEAM-NNBAR experiment at the European Spallation Source

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The HIBEAM-NNBAR program is a proposed two-stage experiment at the European Spallation Source (ESS) designed to search for neutrons converting, or oscillating, into antineutrons and/or sterile neutrons. Such an observation would indicate baryon number violation, a fundamental Sakharov condition for baryogenesis, or act as a sign of a potential dark sector. The experiment would increase the sensitivity to neutron conversion probabilities by three orders of magnitude compared with previous free neutron searches, being sensitive to a scale of new physics substantially in excess of that available at colliders. HIBEAM-NNBAR is a cross-disciplinary experiment with a clear particle physics goal. The community encompasses physicists from large collider experiments and low energy nuclear physics experiments, together with scientists specialising in neutronics and magnetics. In this talk I summarize the current status of the experiment and provide an outlook for the future of the experiment, both from a short and long term perspective.

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