

# Search for neutron conversions with the HIBEAM/NNBAR experiment

*Friday 19 July 2024 09:55 (17 minutes)*

The HIBEAM/NNBAR experiment is a two stage experiment for the European Spallation Source to search for baryon number violation. The experiment would make high sensitivity searches for baryon number violating processes:  $n \rightarrow \bar{n}$  and  $n \rightarrow n'$  (neutron to sterile neutron), corresponding to the selection rules in baryon number  $\Delta B = 2, 1$ , respectively. The experiment addresses open questions such as baryogenesis and dark matter, and is sensitive to a scale of new physics in excess of that available at colliders. The experiment comprises physicists from large collider experiments and low energy nuclear physics experiments, together with scientists specialising in neutronics and magnetics. European, US, and South American communities are represented. The experiment can increase the sensitivity to neutron conversion probabilities by three orders of magnitude compared with previous searches. The opportunity to make such a leap in sensitivity in tests of a global symmetry is a rare one.

## Alternate track

1. Dark Matter Detection

## I read the instructions above

Yes

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**Session Classification:** Beyond the Standard Model

**Track Classification:** 03. Beyond the Standard Model