



Contribution ID: 179

Type: **not specified**

## The HIBEAM/NNBAR program

The European Spallation Source will open a new intensity frontier in particle physics. The two-stage HIBEAM/NNBAR program can exploit the potential of the ESS with a series of high-precision searches and measurements. A key part of the program is the first search for over thirty years for free neutrons converting to antineutrons, thereby testing baryon number conservation. A discovery sensitivity, compared with earlier work, of three orders of magnitude is possible. In addition to neutron-antineutron conversions, the HIBEAM/NNBAR program has a broad potential, including, for example, high-sensitivity searches for ultralight axion-like particles (ALPs) and sterile neutrons. Modifications to a beamline of HIBEAM design allow highly sensitive measurements of neutron decay and a search for a non-zero neutron electric dipole moment.

**Authors:** Prof. MILSTEAD, David (Stockholm University, Physics Department); Dr SANTORO, Valentina (Lund University, Physics Department)