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Fundamental Physics possibilities @ ESS

The European Spallation Source (ESS) is being constructed in Lund, Sweden, to be the brightest cold (< 0.025 eV) spallation neutron source in the world. The facility uses a 2 GeV proton beam hitting a tungsten target to produce neutrons via spallation. The neutrons are then moderated in cold and thermal moderators consisting of liquid hydrogen and water, respectively. Surrounding the moderators are 42 beamports, which view the moderator's outside surfaces.
The scope of ESS, is to build and operate 22 world-leading instruments in an open user program. Of these, the first 15 will be brought on-line by the end of 2025. For the remaining 7 instruments, a recent document from ESS has analysed the capability gaps remaining after construction of the first 15 instruments, and the result of this analysis has shown that one of the communities that is most obviously not catered is the particle physics community. Therefore, it is in the ESS view that the science program should include at least a particle physics instrument.
Four different instruments for particle and nuclear physics have been
identified at ESS:
- the cold beam line: ANNI,
- an Ultra Cold Neutron source,
- the neutron-antineutron experiment: NNBAR
-the HIBEAM beamline "High Intensity Baryon extraction and measurement"
I will give an overview of the present status of the ESS and of the possibilities for the fundamental physics community

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