

The European Spallation Source

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The European Spallation Source (ESS) is one of Europe's biggest and most prestigious science projects. ESS will be the world's most powerful next generation neutron spallation source for research with neutrons, providing a unique tool for studies of the atomic structure and dynamics of matter.

The 5 MW European Spallation Source (ESS) – to be built in Lund, Sweden – is typical of the generation of multi-MW superconducting proton linacs currently under design, discussion and construction. First neutrons are expected in 2019.

The ESS is a joint project sponsored by 17 European countries, to build the world's brightest neutron source for the study of materials and fundamental physics. ESS aims to accelerate protons up to 2 GeV and 50 mA to generate neutrons using spallation from a rotating heavy element target. The neutron pulses that ESS will generate will be more than 30 times brighter than the world's brightest reactor based sources. In the ESS pre-construction phase, the European neutron community are participating in an extensive instrument conceptual design effort, as well as in workshops and symposia to discuss the best way to utilize the scientific opportunities that ESS will offer. In this talk, I will outline the scientific opportunities and how these are manifested in the suite of instruments that is currently under development.