

Development of High Intensity Neutron Source at the European Spallation Source: the HighNESS Project

V. Santoro

European Spallation Source ESS
Partikelgatan 2, 224 84 Lund

The European Spallation Source (ESS), presently under construction, in Lund, Sweden, is a multi-disciplinary international laboratory that will operate the world's most powerful pulsed neutron source. Supported by 3MEuro Research and Innovation Action within the EU Horizon 2020 program, a design study (HighNESS¹) is now underway to develop a second neutron source below the spallation target. Compared to the first source, located above the spallation target and designed for high cold and thermal brightness, the new source will provide a higher intensity (the total number of neutrons from the moderator), and a shift to longer wavelengths in the spectral regions of Cold (4–10 Å), Very Cold (10–40 Å), and Ultra Cold (several 100 Å) neutrons. The features of this new source will boost several areas of condensed matter research and also will provide unique opportunities in fundamental physics. Part of the HighNESS project is also dedicated to develop the future instruments that will make use of the new source and will complement the initial suite of instruments already planned at ESS. The HighNESS project started in October 2020. I will show the goals of the project, the ongoing developments and the first results obtained.

¹ <https://highnessproject.eu/>