

ESS Bilbao. Current Status and Perspectives

ESS Bilbao is a public consortium of the Spanish and Basque Governments. It brings knowledge and added value in particle accelerators, nuclear and neutron and scattering science and technologies by leveraging its in-kind contribution to the European Spallation Neutron Source (ESS), in Lund (Sweden). ESS is currently under construction and when operating will represent the most powerful neutron facility worldwide.

ESS Bilbao is delivering key in-kind components to the facility, including the MEBT, the RF Systems for the cold Linac, several Target Systems and the instrument MIRACLES. We will briefly introduce the status and development of such in-kind contributions.

Additionally, ESS Bilbao is developing, in collaboration with other partners within Europe under the umbrella of the European Low Energy accelerator-based Neutron facilities Association (ELENA –www.ELENA-neutron.eu), a cost-effective alternative to the classical research reactors and spallation neutron sources. These sources developed based on lower power accelerators that do not utilize spallation are so called High Current Accelerator-driven Neutron Sources (HiCANS) and offer new challenges in their optimization for particular applications to serve dedicated communities on the regional or national level including science as well as industry.

The current HiCANS projects are aimed at rejuvenating the European neutron ecosystem after the shut-down of major older research-reactor based national neutron sources. To cite the recent LENS –BrightnESS - ENSA position paper “Neutron Science in Europe” : “Though ESS will provide enhanced capabilities, these can only be fully exploited if the supporting ecosystem has sufficient strength, depth and diversity.” ... “The only route for entirely new facilities with significant capacity are High Current Accelerator-driven Neutron Sources ...”

This contribution will also describe one of such envisaged infrastructures, ARGITU [1], a unique and versatile local compact accelerator-driven neutron source being developed by ESS Bilbao in collaboration with local BERCS (Basque Excellence Research Centers). This infrastructure will undoubtedly place the Basque country at the forefront of research in neutrons within Europe and will serve as a magnet for attracting talent, thus fostering its neutron R&D ecosystem.

[1] M. Pérez, F. Sordo, I. Bustinduy, J. L. Muñoz & F. J. Villacorta, News, 31:2-4, 19-25, (2020)

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Session Classification: Target and Moderator