



Contribution ID: 6

Type: **Oral Presentation**

Making ESS a success –A landscape of European accelerator based neutron sources

Tuesday, 15 October 2019 09:50 (25 minutes)

With the construction of the high power European Spallation Source (ESS) the European neutron community will have access to the most powerful neutron source worldwide. On the other hand the dwindling of reactor based neutron sources in Europe and the US will lead to reduced access opportunities to neutrons. Training of young scientists and the development of experimental methods will be hampered. An alternative to the classical neutron sources providing scientist with required neutrons, accelerator driven neutron sources present with high brilliance neutron provision.

The Jülich Centre for Neutron Science has started a project to develop and design compact accelerator driven high-brilliance neutron sources (HBS) as an efficient and cost effective alternative to current low- and medium-flux reactor and spallation sources. Such compact sources will offer access of science and industry to neutrons as medium-flux, but high-brilliance neutron facilities. HBS will consist of a high current proton accelerator, a compact neutron production and moderator system and an optimized neutron transport system to provide thermal and cold neutrons with high brilliance. The project will allow construction of a scalable neutron source ranging from a university based neutron laboratory to full user facility with open access and service. Embedded within international collaboration with partners from Germany, Europe and Japan the Jülich HBS project will offer flexible solutions to the scientific requirements and establish a new opportunity to exploit neutrons beyond current limitations.

We will describe the current status of the project and its partners, the next steps, milestones and the vision for the future neutron landscape in Europe with the perspective to guarantee the success of the ESS.

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Session Classification: Plenary

Track Classification: Facility Update