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Bringing Neutrons to the User –The HBS Project for Accelerator Based Neutron Sources

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With the construction of the high power European Spallation Source (ESS) and the dwindling of reactor based neutron sources in Europe and the US, the neutron user community is facing a mixed outlook towards the availability of neutrons in the coming decades. Accelerator driven neutron sources with high brilliance neutron provision present an alternative to the classical neutron sources to provide scientist with required neutrons to probe structure and dynamics of matter.

The Jülich Centre for Neutron Science has started a project to develop and design compact accelerator driven high-brilliance neutron sources 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. The “High-Brilliance Neutron Source (HBS)” will consist of a high current proton or deuteron 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 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.

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