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The European Low Energy accelerator-based Neutron facilities Association (ELENA) –Current Status and Perspectives

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The European Low Energy accelerator-based Neutron facilities Association (ELENA –www.ELENA-neutron.eu) is promoting the development of Compact Accelerator-driven Neutron Sources (CANS) and High Current Accelerator-driven Neutron Sources (HiCANS) in Europe. It represents 7 projects and 8 institutions from major European countries: Italy, Spain, France, Germany, Norway, Sweden, Hungary and Israel. HBS, SONATE and ARGITU are examples of HiCANS with an instrument performance equal to or exceeding that of medium size research reactors, while LvB is a CANS project serving industry.

The projects, which we develop in collaboration, 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 ...”

The members of ELENA strongly believe that we have to act now if we don't want to be limited with only four major sources (ESS, ISIS, SINQ and MLZ) in the future for about 5000 European neutron users –a situation which will not allow most of these users to maintain a strong research program with neutrons. The situation is even more serious if we consider the downtimes for maintenance, technical problems and upgrades as the last years have shown, where sometimes only one of the remaining major sources was in operation. Such a situation is prohibitive for doctoral projects, where students typically need at least a few days beam times per year for three years. Having only very few sources makes the ecosystem extremely vulnerable.

In this paper, an overview of the ELENA association and on-going projects is given, presenting the potential of HiCANS as an opportunity to regain a strong, diverse, and healthy neutron landscape.

At ECNS the community shall be informed first-hand about these prospects in order to gather support for a rejuvenated European neutron ecosystem.

This work is part of the collaboration within ELENA and LENS on the development of HiCANS.

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