Contribution ID: **125** Type: **Poster**

Feasibility study for a new high-intensity muon beam line (HiMB) at PSI

Tuesday 10 September 2013 18:00 (3 hours)

Muons are an excellent tool for answering both fundamental and applied questions concerning the structure and properties of matter and consequently are in high demand at accelerator facilities. For material sciences, muon spin resonance techniques (muSR) are used to probe the magnetic structures of novel materials. In particle physics a number of fundamental measurements rely on the availability of large numbers of muons such as those of the searches for lepton number violating decays, the precise measurements of the muon decay properties and studies of muonic atoms.
At the Paul Scherrer Institut (PSI) muon rates of up to 4x10ˆ8 mu/s are available, produced by its 1.3 MW proton accelerator complex HIPA. While these are currently the highest muon rates available worldwide, projects in the US and Japan are underway that will be able to surpass these intensities by several orders of magnitude. In order to maintain PSI's position at the intensity frontier in muon physics and to utilize the unique DC machine structure with its great advantage for coincidence-type experiments, a feasibility study has just started to assess the possibility of creating a next-generation muon beam from pions produced in the neutron spallation target of the SINQ facility and stopped in its beam entrance window. Potentially, muon rates of the order of 10ˆ10 mu/s could be achieved in this way. Such rates are necessary for the successful operation of improved and novel beams for muSR applications and for the proposed search for the lepton number violating decay mu -> eee.
This poster presents the concept of the feasibility study.

Primary author: KNECHT, Andreas (Paul Scherrer Institut)

Co-author: KETTLE, Peter-Raymond (Paul Scherrer Institute PSI)

Presenter: KNECHT, Andreas (Paul Scherrer Institut)

Session Classification: Poster, BBQ & Drinks