

The Fundamental Physics beamline @ ESS

Tuesday 10 September 2013 18:00 (3 hours)

The European Spallation Source (ESS) will provide to the scientific community new opportunities of research using neutrons. Indeed, the unique capabilities of the ESS, namely the high peak flux of the neutron beam and the inherent time structure of the beam, will permit to push the frontiers of neutron sciences.

These properties will be very useful for many fundamental physics experiments. Therefore we are preparing a proposal for a fundamental physics beamline. The pulsed time structure of the ESS requires a careful optimisation of the beamline parameters.

As example, we have studied two state-of-the-art high precision neutron beta decay experiments which test the Standard Model with cold neutrons : PERC and aSPECT. Both experiments would profit from the time structure of the beam in terms of signal to background ratio, effectively lowering systematics. We discuss the impact of a pulsed beam and derive first beamline parameters for an installation at ESS. We determine also the gain factor compared to a research reactor.

Primary author: Dr THEROINE, Camille (ESS)

Co-authors: Dr HIESS, Arno (ESS); KLAUSER, Christine (ILL); Dr HALL-WILTON, Richard (ESS); Mr MAISONOBE, Romain (Institut Laue-Langevin); SOLDNER, Torsten (TU München)

Presenter: Dr THEROINE, Camille (ESS)

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