

Fan chopper for chopper spectrometers at long pulse neutron sources

Friday, 1 December 2017 09:40 (20)

The unique conditions of the long pulses generated at the European Spallation Source (ESS) allow for multi-chromatic operation of spectrometers. The full wavelength spectrum of a single ESS pulse is subdivided into a number of sub-pulses of different wavelengths by the chopper system. However, the chopper system must not only assign a unique wavelength to the sub-pulse but also adapt the time frame to the respective energy of the pulse. A newly developed so called fan chopper is able to selectively suppress sub-pulses as they are generated by the pulse chopper of the instrument.

The design consists of 10 separate blades spinning synchronized to the source frequency of 14 Hz on a common axis like clock hands. Like in a clock the blades are mounted on hollow shafts. Each of them is connected to an individual drive. This setup allows to adjust an angular phase shift between the blades during operation generating an adjustable "slit-pattern". A first prototype has been built and a feasibility study has been performed at ISIS on the cold neutron chopper spectrometer LET. The mechanical design, the control and drive system and our findings during the measurements at LET are presented.

Formal Invitation Letter Required

No

Primary author(s) : Mr HARBOTT, Peter (Forschungszentrum Jülich GmbH - JCNS)

Co-author(s) : Dr VOIGT, Jörg (Forschungszentrum Jülich GmbH - JCNS); Mr BUSSMANN, Klaus (Forschungszentrum Jülich GmbH - JCNS); Mr JANASCHKE, Sven (Forschungszentrum Jülich GmbH - JCNS)

Presenter(s) : Mr HARBOTT, Peter (Forschungszentrum Jülich GmbH - JCNS)

Session Classification : Session E

Track Classification : Choppers and choppers systems