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Talk 2: ECHIR: a Beamline for Chip Irradiation at ESS

Wednesday, 12 June 2024 09:55 (12 minutes)

Abstract:

In the design and construction phase of the European Spallation Source, a considerable effort was devoted to investigating the possibility of a chip irradiation facility [1]. A neutronic study of a beamline for fast neutrons originating in the spallation reaction induced by the high energy proton beam on the ESS tungsten target was conducted, resulting in the selection of a beamline placed in the forward direction with respect to the incoming proton beam, and directed downwards into the basement of the target building. The characteristics of the neutron beam, in particular the beam profile, the beam footprint, and the energy spectrum, in a location at about 10 m distance from the spallation target were determined. Additionally, a beam dump was designed. Following this study, some essential components of this ECHIR beamline were designed, built, and installed at ESS, including a channel for fast neutron extraction, a beam shutter, and a beam dump. These components constitute a provision for a future possible chip irradiation facility at ESS. In this talk, I will summarize the neutronic design, show the components that have been installed at ESS, and discuss future possibilities for this facility.

CV:

I have a PhD in neutron physics and worked for 30 years with neutrons. I have worked at ESS since 2011, where I have designed some components such as the neutron moderators for cold and thermal neutrons production for neutron scattering experiments, and the neutron bunker for biological shielding. I am currently helping on finishing the construction of the facility and designing future upgrades.

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