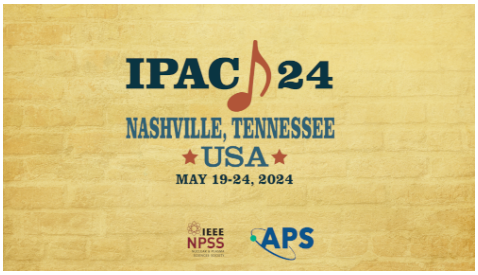

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Developments of beam loss monitors for FETS-FFA test ring

Wednesday, 22 May 2024 16:00 (2 hours)

ISIS-II is UK's proposed next-generation pulsed, spallation neutron source, and is expected to be driven by a MW-class proton accelerator. A Fixed Field Alternating gradient (FFA) machine is one accelerator configuration being considered. A demonstrator machine, called FETS-FFA, is now being actively developed. Beam Loss Monitors (BLMs) for this demonstrator are presented with the unique challenge of low-energy (3-12 MeV) and low intensity (1e+11 ppp) beams, and should provide turn-by-turn measurements during commissioning as well as form a vital component of the Machine Protection System (MPS). The final BLM systems will operate in stray magnetic fields from the main magnets, and need to fit in the limited available space. This paper presents a feasibility study of using a combination of Ionisation Chambers (IC) and Scintillation Detectors (SD). The ideal geometry of both BLM types will be discussed, and comparisons made between Monte Carlo simulations and beam tests on the FETS linac at the Rutherford Appleton Laboratory.

Footnotes

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