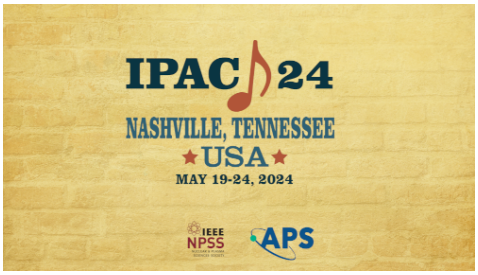

Contribution ID: **1119** Contribution code: **WEPG47** Type: **Poster Presentation**

Improving the dynamic range of a wire scanner up to 1e+7

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

Diagnostics and control of beam halo along the beamline are of utmost importance for a high-intensity proton accelerator. To guide halo collimation and mitigate beam loss, halo diagnostics at different betatron phases have been proposed for the CSNS hydrogen linac accelerator. Instead of a scintillating detector, a wire scanner with a neutron-sensitive BF3 detector has been suggested, achieving a dynamic range of 1e+5. To further enhance the bottom limit of halo diagnotics, a novel wire scanner equipped with a fluorescence strip has been proposed and demonstrated at CSNS linac. This design has a high light yield and blooming-free design, enabling a dynamic range of over 1e+7 using a CMOS camera during the initial commissioning phase. This paper reports on the optimizations of the dynamic ranges of the aforementioned two schemes and the sequence observations of beam-halo dynamics.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

Asia

Primary author: YANG, Renjun (Institute of High Energy Physics)

Presenter: YANG, Renjun (Institute of High Energy Physics)

Session Classification: Wednesday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback, and Operational Aspects: MC6.T03 Beam Diagnostics and Instrumentation