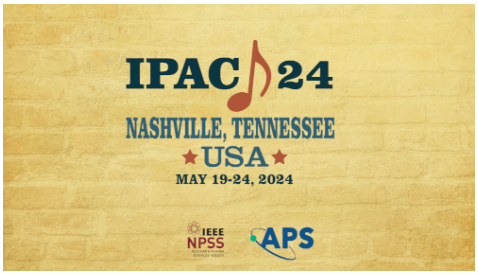

Contribution ID: **1297** Contribution code: **WEPG93** Type: **Poster Presentation**

Gas sheet ionization based monitor for electron beams

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

The gas sheet ionization based diagnostic is a minimally invasive profile monitor for electron beams. In the ionization based monitor, the electron beam ionizes a neutral gas that is spatially tailored. The newly ionized particles form a footprint of the electron beam, and are imaged using an array of electrostatic lenses. The gas sheet diagnostic was conceptually tested using a 7 MeV electron beam and has shown strong correlations for use as a transverse profile. The concept is extendible, and proposed, for use with electron beams with energy greater than 10 GeV. Although different ionization mechanisms are dominant for each regime, the gas sheet diagnostic imaging scheme is viable when novel algorithms are employed to reconstruct the beam profile.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

North America

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Session Classification: Wednesday Poster Session

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