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A systematic investigation of beam losses and position reconstruction techniques measured with a novel oBLM at CLEAR

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Optical Beam Loss Monitors (oBLMs) allow for cost-efficient and spatially continuous measurements of beam losses at accelerator facilities. A standard oBLM consists of several tens of meters of optical fibre aligned parallel to the beamline, coupled to photosensors at either or both ends. Using the timing information from loss signals, the loss positions can be reconstructed. This contribution presents a novel oBLM system recently deployed at the CERN Linear Electron Accelerator for Research (CLEAR). Multiple methods of extracting timing and position information from measured waveforms are investigated, and the potential impact of varying beam parameters such as bunch charge or number is analysed. This work has resulted in the development of a GUI to aid operations by visualizing the beam losses and their positions in real time.

Footnotes

Funding Agency

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Yes

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