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Beam Energy Measurement with X-ray Scintillator Imaging in the 6-MeV Linac at SLRI

Tuesday 9 September 2025 16:00 (2 hours)

The Synchrotron Light Research Institute (SLRI) in Thailand aims to operate a 6-MeV electron linear accelerator for irradiation, supporting various agricultural and industrial applications. This study presents a method for measuring electron beam energy using the existing dipole magnet in the beamline, originally designed for scanning X-rays on samples through a scan horn. An aluminum sheet coated with terbium-doped gadolinium oxysulfide (Gd_2O_2S) was used as a scintillation screen for X-ray illumination and placed downstream of the scan horn. X-ray scintillator images were captured with a CCD camera. By analyzing shifts in the X-ray image centroid as the dipole magnet current varied, we were able to determine the electron beam energy. The experimental setup, simulations, and measurement results are presented and discussed.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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