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Numerical simulation of on-axis helical undulator radiation using SCILAB-Xcos model

Monday 2 June 2025 16:00 (2 hours)

Abstract—A SCILAB Xcos model, developed using SCILAB software version 6.1.1, was implemented to simulate the on-axis radiation intensity of a helical undulator, (undulator parameter= 1, undulator wavelength 5cm, number of periods= 10, device length 0.6 m) with an electron beam (1, 2, & 3 GeV) and beam current as $I_b = 3-6 \times 10^{-6}$ Ampere. A numerical approach is utilized to perform the undulator radiation intensity calculations. The computed results were validated by comparing the on-axis undulator radiation intensity with those obtained from SPECTRA, an open-source synchrotron radiation (SR) calculation software.

Footnotes

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Author: Ms SAYED, MAHAZBEEN (Rajiv Gandhi Proudhyogiki Vishvidhyala)

Co-authors: JEEVAKHAN, Hussain (National Institute of Technical Teachers' Training and Research); KUSHWAHA, Kamal (Rajiv Gandhi Proudhyogiki Vishvidhyala)

Presenter: Ms SAYED, MAHAZBEEN (Rajiv Gandhi Proudhyogiki Vishvidhyala)

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