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UNDUMAG - WAVE recent developments

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The codes UNDUMAG and WAVE have been developed at HZB/BESSY. They are used intensively to design undulators, and to understand their magnetic and synchrotron radiation properties, as well as their impact on the storage ring.

Recent extensions will be presented. A more intuitive input file to define undulator geometry has been developed, as well as a Python based GUI that allows the set-up of common undulator types. This GUI also allows the visualization of results. The magnetization of permanent magnet blocks can now be defined in terms of polynomial coefficients to simulate and study magnet inhomogeneities.

WAVE has also been interfaced to UNDUMAG to calculate the real magnetic field of insertion devices. A second undulator mode has also been developed that calculates undulator synchrotron radiation by summing the radiation field amplitudes of a single period with appropriate phase advance and depth of field effect corrections. Field and phase errors can be included in this mode, which has seen a speed performance increase of an order of magnitude.

Funding Agency

Footnotes

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Yes

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