



Contribution ID: 762 Contribution code: THPR76

Type: **Poster Presentation**

A new approach to solving the problem of an extended helical undulator.

Thursday, 23 May 2024 16:00 (2 hours)

An exact solution for the radiation field of a particle in a helical undulator, valid for an arbitrary point in space and an arbitrary particle energy, was obtained by the partial domain method, generalized for the case of spiral motion of a particle. The interface between the regions is a cylindrical surface containing the spiral trajectory of the particle. A comparison is made with the existing solution, which is valid in the far zone at high particle energies.

Footnotes

Funding Agency

The work was supported by the Science Committee of RA, in the frames of the research projects № 21T-1C239 and № 23SC-CNR-1C006

Paper preparation format

Word

Region represented

Asia

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Session Classification: Thursday Poster Session

Track Classification: MC8: Application of Accelerators, Technology Transfer, Industrial Relations, and Outreach: MC8.U08 Radiation Effects