ICAP'24   GSI   TECHNISCHE UNIVERSITÄT DARMSTADT

Beitrag ID: **16**   Typ: **Invited talk**

MAD-NG, a standalone multiplatform tool for non-linear optics design and optimisation.

Donnerstag, 3. Oktober 2024 14:30 (30 Minuten)

The presentation will provide an overview of the capabilities of the Methodical Accelerator Design Next Generation (MAD-NG) tool. MAD-NG is a standalone, all-in-one, multiplaform tool well suited for linear and nonlinear optics design and optimisation, and has already been used in large-scale studies such as HiLumi-LHC or FCC-ee. It embeds LuaJIT, an extremely fast tracing just-in-time compiler for the Lua programming language, delivering exceptional versatility and performance for the forefront computational physics. The core of MAD-NG relies on the fast Generalised Truncated Power Series Algebra (GTPSA) library, which has been specially developed to handle many parameters and high-order differential algebra, including Lie map operators. This echosystem offers powerful features for the analysis and optimisation of nonlinear optics, thanks to the fast parametric nonlinear normal forms and the polyvalent matching command. Some examples and results will be presented in conclusion.

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Sitzung Einordnung: Sessions in Seminar Room 2013/2014

Track Klassifizierung: F-1 Code Development, Status and Comparison with Measurements