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Comparison of tracking codes for beam-matter interaction

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The interaction of particle beams with materials is important for muon colliders, as it causes particle scattering, energy loss and energy-straggling processes. Such interactions are also relevant in high-precision applications such as radiation oncology treatment planning, where the beam travels through air before reaching the patient, and are also the crucial mechanism for ionization cooling processes, such as those required for generating high-brightness beams for muon colliders. Few particle tracking codes integrate such effects in an environment suitable for lattice design. This work presents the simulation of these effects in the beam tracking program RF-Track (v2.1), compares the beam-matter interactions with the tracking programs ICOOL (v331.1) and G4Beamline (v3.08) and discusses the results.

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Footnotes

I have read and accept the Privacy Policy Statement

Yes

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