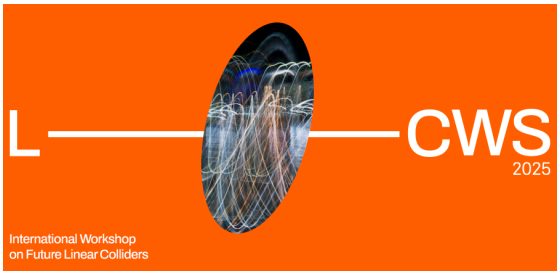

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The RF-Track tracking code: features and applications

Thursday 23 October 2025 13:10 (20 minutes)

RF-Track is a high-performance particle tracking for the simulation and optimisation of particle accelerators. It supports beams with arbitrary energy, mass, charge, and spin polarisation, and is particularly suited to high-intensity injectors and linacs, positron sources, photoinjectors, medical accelerators, inverse Compton scattering sources, and unconventional systems such as the cooling channel of a future muon collider. It includes a growing set of collective effects: space-charge forces in bunched and continuous beams, synchrotron radiation emission, short- and long-range wakefields, beam loading (and its compensation), intra-beam scattering, and particle–matter interaction. RF-Track is implemented in optimised, parallel C++ and available with Python and Octave interfaces, enabling seamless integration with other codes and flexible development of complex simulations. This presentation presents an overview of the code and showcases a few selected applications.

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