ID contributo: **211**   Tipo: **Oral contribution**

DiWaCAT: An Efficient Field Solver and Beam Tracker for Dielectric Wakefield Acceleration Applications

mercoledì 20 settembre 2023 17:05 (20 minuti)

Dielectric Wakefield Acceleration (DWA) is a promising technology with potential applications in future accelerators. To facilitate DWA research and experimentation, we have developed Dielectric Wakefield Calculator and Tracker (DiWaCAT), a versatile python and C++ based code. DiWaCAT enables rapid and accurate 3D wakefield calculations in circular and planar dielectric-lined waveguides (DLWs) and provides comprehensive beam tracking capabilities through these structures. The accuracy of fields calculated has been validated by benchmarking against the commercially available code CST and beam property measurements have been benchmarked against experimental results. Input beams for DiWaCAT can be made with arbitrary 6D beam properties, including a variety of longitudinal bunch profiles, or imported from other accelerator simulation codes. Particles can be tracked and outputted in a format compatible with accelerator codes for start-to-end simulations. The software presented allows for fast simulations of DWA experiments across a wide range of beam and DLW parameters and enables exploration of future applications of DWA technologies.

Autore principale: OVERTON, Toby (ASTeC, STFC Daresbury Laboratory)

Coautore: PACEY, Thomas (Cockcroft Institute/University of Manchester); SAVELIEV, Yuri (STFC, Daresbury Lab., ASTeC); Sig.na HIGUERA GONZALEZ, Beatriz (Cockcroft Institute/University of Manchester); XIA, Guoxing (Cockcroft Institute and the University of Manchester); Dr. VINT, Andrew (The University of Lancaster)

Relatore: OVERTON, Toby (ASTeC, STFC Daresbury Laboratory)

Classifica Sessioni: WG3: Theory and simulations

Classificazione della track: WG3: Theory and simulations