



Contribution ID: 1599 Contribution code: MOPS23

Type: **Poster Presentation**

Python FLUKA BeamLine (pyflubl), a python library to create FLUKA simulations of accelerators

Monday, 20 May 2024 16:00 (2 hours)

FLUKA simulations of beamlines are important for understanding numerous different aspects of accelerators, including beam losses, particle backgrounds, activation and shielding. Creating a beamline simulation using FLUKA is a time consuming and potentially error prone process. This paper describes a set of python tools called pyflubl (Python FLUKA beamline) which can create a FLUKA simulation using input from MAD-X, MAD8, Transport or BDSIM. pyflubl is based on multiple stable and advanced python packages created to make BDSIM (Geant4) beamline simulations as simple as possible, these are pymadx (an interface to MAD-X output), pymad8 (an interface to MAD8 output), pybdsim (interface to BDSIM) and most importantly pyg4ometry (a geometry engine for Monte Carlo geometry creation). The magnetic fields required for FLUKA are implemented in C++ via BDSIM, thus keeping fields consistent between Geant4 and FLUKA beamline simulations. This paper describes pyflubl design and implementation and example results for a idealized electron beamline. Particular attention is given to geometry, fields and scoring.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

Europe

Primary author: BOOGERT, Stewart (Cockcroft Institute)

Co-author: NEVAY, Laurence (European Organization for Nuclear Research)

Presenter: BOOGERT, Stewart (Cockcroft Institute)

Session Classification: Monday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D03 Calculations of EM fields Theory and Code Developments