Contribution ID: **1662** Contribution code: **WEPS123** Type: **Poster Presentation**

Enhanced G4beamline advanced GUI for accelerator modeling

Wednesday 4 June 2025 16:00 (2 hours)

Graphical user interfaces (GUIs) are sought to support particle accelerator and beamline modeling for both conventional and advanced accelerator concepts. Downloaded over 1500 times in the last 22 years, G4beamline (available gratis from Muons, Inc.) has been used for diverse applications in science and industry, representing over 50M$ of economic activity. Its strengths include ease of use compared to its underlying CERN Geant4 package, flexibility in modeling beamline elements (as well as other systems such as particle detectors), and use of the well tested Geant4 libraries to track particles in electromagnetic fields and in matter: of particular importance in simulating muon cooling and muon colliders. Its current GUI interface is however rudimentary. A more comprehensive and modern GUI would enhance the program's utility and user appeal, attracting a wider community of users in accelerator science and related fields. Another valuable feature would be "hooks" in the GUI interface for additional commonly used simulation programs such as MCNP and MAD-X, easing comparisons among alternative accelerator modeling tools by providing a common geometry description and output format.

Footnotes

Paper preparation format

Word

Region represented

Asia

Funding Agency

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Session Classification: Wednesday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D11 Code Developments and Simulation Techniques