Software & analysis status

Oleksandr Borysov

behalf of Software and Analysis group

LUXE Steering Board Meeting

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- Waiting for a more definitive statement about the move to the new location before staring the implementation and simulation study

Ptarmigan simulation code

Details on Tom's slides: https://indico.desy.de/event/48675/contributions/184699/attachments/96357/132181/2025-03%20Custom%20beams.pdf

- As of v1.4.2 (latest), the incident particle can either be generated, assuming Gaussian momentum and spatial distributions, or loaded from an external HDF5 with specified structure.

Ptarmigan v1.5.0 upcoming features

- Allow energy spectrum to be defined by a custom function or imported from a file.
- Plain-text, evenly spaced points, normalisation not required.
  - Available on development branch: `v1.5.0-alpha`
- Next: custom laser profiles.
  - More realistic treatment of focusing increases waist (radius at which intensity is $1/e^2$ of its central value) and decreases peak intensity at fixed f-number and power P_0.
  - Ambition is to include a simplified model for focusing of a beam with a flat-top profile in the far field (i.e. an Airy disk in the focal plane).
  - ... and then represent an arbitrary profile in the focal plane as a linear combination of Hermite/Laguerre-Gauss modes.