Contribution ID: **1034** Contribution code: **THPS110**   Type: **Poster Presentation**

Advancing accelerator science through data-intensive research and training

Thursday 5 June 2025 15:30 (2 hours)

The Liverpool Centre for Doctoral Training in Innovation in Data Intensive Science (LIV.INNO) has made significant progress in applying data-intensive methods to accelerator research. This contribution presents research outcomes from the center with a focus on two key projects. The first focuses on optimizing 3D imaging for medical and industrial applications, integrating Monte Carlo simulations and advanced collimation techniques to enhance low-dose, portable X-ray systems, with implications for wider accelerator diagnostics. The second leverages deep learning models to reconstruct transverse beam distributions at CERN, addressing challenges in image distortion from multimode optical fibers under high-radiation conditions. The results will be connected with wider progress in the area of machine learning and artificial intelligence for particle accelerators. Furthermore, the contribution will summarize the outcomes of the STFC Summer School in Data Intensive Science and the LIV.INNO industry showcase, both of which were held in Liverpool, UK in 2024.

Footnotes

Paper preparation format

Word

Region represented

Europe

Funding Agency

Author: Prof. WELSCH, Carsten (The University of Liverpool)

Presenter: Prof. WELSCH, Carsten (The University of Liverpool)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation and Controls,Feedback and Operational Aspects: MC6.D13 Machine Learning