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Virtual Diagnostics for High Brightness Accelerators

Thursday, June 22, 2023 5:25 PM (25 minutes)

Diagnostic methods that are enhanced with machine learning are improving the speed and detail with which beam behavior can be characterized on-the-fly in real accelerator systems. Detailed characterization can in turn improve both high-precision modeling of accelerator systems and high-precision optimization/control for high brightness beams. This talk will outline the state-of-the-art in machine learning enhanced diagnostics for accelerators, ranging from fast data-driven approaches for shot-to-shot prediction to methods that tightly couple machine learning and physics simulations for unprecedented fidelity in beam phase space reconstruction.

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Session Classification: Beam dynamics and controls