Contribution ID: **95** Type: **Talk**

Machine learning for particle physics simulations

Monday 24 July 2023 10:00 (20 minutes)

Accurate detector simulations are key components of any measurement or search for new physics. Due to their stochastic nature, ML-based generative models are natural opportunities for fast, differentiable simulations. We present two such graph- and attention-based models for generating LHC-like data using sparse and efficient point cloud representations, with state-of-the-art results. We measure a three-orders-of-magnitude improvement in latency compared to LHC full simulations, and also discuss recent work on evaluation metrics for validating such ML-based fast simulations.

Primary authors: KANSAL, Raghav (Univ. of California San Diego (US)); DUARTE, Javier Mauricio (Univ. of California San Diego (US))

Presenter: KANSAL, Raghav (Univ. of California San Diego (US))

Session Classification: Applications in Particle Physics

Track Classification: Particle Physics