Contribution ID: **29** Type: **not specified**

Hadronization and Machine Learning

Hadronization, the transition from unobservable partons to measurable hadrons, is a key component of how the Standard Model of particle physics explains current data. However, due to its intrinsically non-perturbative nature, it remains challenging to model from first principles. In particle physics, where simulators are needed to relate theory and collider experiments, Monte Carlo event generators have incorporated hadronization with great success via a series of sophisticated fine-tuned empirical models. Nonetheless, current and future collider experiments are pushing simulators to their limits. Motivated by these difficulties, in these lectures I'll present proposed alternatives where the empirical model is replaced by a surrogate data-trainable Machine Learning-based model. This model should be physics-based, fit available data and be made part of existing Monte Carlo simulators so as to be usable by the community.

Author: SZEWC, Manuel

Presenter: SZEWC, Manuel

Session Classification: Lectures 1/3