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Deep-Learned Event Variables for Collider Phenomenology

Monday 12 July 2021 14:30 (15 minutes)

In this talk, we will introduce a technique to train neural networks into being good event variables, which are useful to an analysis over a range of values for the unknown parameters of a model.

We will use our technique to learn event variables for several common event topologies studied in colliders. We will demonstrate that the networks trained using our technique can mimic powerful, previously known event variables like invariant mass, transverse mass, and MT2.

We will describe how the machine learned event variables can go beyond the hand-derived event variables in terms of sensitivity, while retaining several attractive properties of event variables, including the robustness they offer against unknown modeling errors.

Are you are a member of the APS Division of Particles and Fields?

Yes

Primary authors: KIM, Doojin (Texas A & M University (US)); KONG, K.C. (University of Kansas); MATCHEV, Konstantin (University of Florida (US)); PARK, Myeonghun (University of Seoul, Department of Physics (KR)); SHYAM-SUNDAR, Prasanth (Fermi National Accelerator Laboratory)

Presenter: SHYAMSUNDAR, Prasanth (Fermi National Accelerator Laboratory)

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