

Towards data-driven particle physics classifiers

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Deep learning in particle physics often relies on imperfect simulations due to the lack of real labelled data, which risks learning mismodeling artifacts rather than the underlying physics. In this talk, I discuss the prospects for training classifiers directly on collider data using mixed samples, drawing from techniques in weak supervision and topic modeling. Using the example of quark versus gluon jet classification, I demonstrate how these ideas allow data-driven classifiers to be trained and actually provide an operational definition of the underlying categories.

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