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【351】Machine Learning Methods for Top Reconstruction using the ATLAS Experiment

Thursday 12 September 2024 14:00 (15 minutes)

The application of state-of-the-art machine learning (ML) techniques based on graph or transformer architectures for LHC collision event reconstruction and classification will be presented. A focus is put on the application of ML methods to events which feature 2 top quarks and a large missing transverse momentum. Those events are especially interesting for searches beyond the standard model. ML helps to overcome the combinatorial challenge of matching each top decay product with the correct parent particle. As a benchmark, these techniques are applied to the search for a scalar partner of the top quark in all-hadronic tt-MET final states with data collected during Run-2 and Run-3 with the ATLAS detector.

Author: Mr DAL SANTO, Daniele (Universität Bern)

Presenter: Mr DAL SANTO, Daniele (Universität Bern)

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