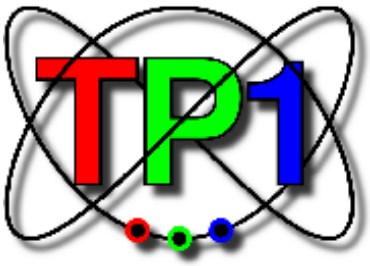

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Particle Theory in a Data-Driven Era

Thursday 19 October 2023 17:15 (1h 15m)

Theory has played a crucial role in the development of the Standard Model (SM) of particle physics and in formulating the questions that point to physics beyond the SM, such as the origin of electroweak symmetry breaking or the particle nature of dark matter. The Large Hadron Collider (LHC) is CERN's flagship particle accelerator and one of the key instruments for exploring the physics of the SM and new phenomena. In the first phase of the LHC, many searches for physics beyond the SM were driven by specific new physics models that would address some of the shortcomings of the SM. However, in the absence of conclusive evidence for new physics, more model-independent approaches are being pursued, such as effective field theories or the search for anomalies using machine learning methods. I will try to clarify the role of theory for the discovery of physics beyond the SM in this data-driven era of LHC physics, and highlight the challenges and opportunities for the next decade.

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