KCETA Colloquium

Thursday, July 23, 2026
Kleiner Hörsaal A (CS)
15:45 - 17:00

Precision Theory for Precision Physics: The HL-LHC and Future Collider Challenge

PD Dr. Mathieu Pellen
(Freiburg University)

Understanding the fundamental physics at high energy requires comparing experimental data to the best theoretical predictions available. In the case of the Large Hadron Collider (LHC), advances in theoretical predictions have come through the development of perturbative computations in quantum field theory. This approach has proven very powerful and successful for comparison with data so far. The upcoming precision era of the LHC, with the advent of the high-luminosity phase (and potentially future colliders), poses several challenges: higher perturbative orders, combining fixed-order with resummation/parton showers, computational cost, automation, etc. After reviewing the state of the art, I illustrate this situation concretely by discussing particular examples.

Please note: The colloquium will also be live-streamed to B401 SR 410 (CN).

KIT Center Elementary Particle and Astroparticle Physics (KCETA)
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