Max Knobbe - HEP Seminar – September 15, 2026
FNAL

Title: Towards Precision Event Generation for the LHC

Abstract: Matching the precision of LHC measurements requires progress at both ends of the event generation chain. I first present a new local infrared subtraction method for NNLO QCD calculations, modeled on the evolution algorithm of a parton shower. Overlapping singularities are disentangled by partial fractioning, and the double-real kinematics mappings are iterations of the NLO ones, matching the recoil definition of NLL-accurate showers. I show results for colour singlet decay, the final state building block relevant for Higgs and hadronic gauge boson decays, and discuss the implementation in Sherpa and Pepper. I then turn to the non-perturbative side, where Bayes linear emulation and history matching replace conventional tuning and identify all hadronisation parameter regions consistent with data, including disjoint solutions that a best fit treatment misses.