Rafael Aoude – HEP Seminar – March 12, 2024
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Title:
Probing new physics through entanglement

Abstract:
Quantum information observables, such as entanglement measures, provide a powerful way to characterize the properties of quantum states. We propose to use them to probe the structure of fundamental interactions and to search for new physics at high energy. Inspired by recent proposals to measure the entanglement of top quark pairs produced at the LHC, we examine how higher-dimensional operators in the framework of the SM Effective Field Theory modify the SM expectations. We explore top pair and diboson production and find that these observables can offer increased sensitivity to operators whose contributions do not interfere with the SM, and generally can lower the entanglement produced by the SM.