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Precision QCD for LHC New Physics Searches: Working with heavy quarks at High Scales & High Orders

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Searches for new physics at the LHC will increasingly depend on identifying deviations from precision Standard Model predictions. At the higher energy scales involved for the LHC Run 2, the heavy quarks play a more prominent role than at the Tevatron. Recent theoretical developments improve our ability to address multi-scale problems and properly incorporate heavy quark masses across the full kinematic range. This includes a Hybrid Variable Flavor Number Scheme (H-VFNS) for heavy flavors, and the extension of the ACOT scheme for heavy quark production to N²LO and N³LO. We review these developments with respect to upcoming Run 2 measurements, and identify areas where additional effort is required.

Oral or Poster Presentation

Oral

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