Thesis Opportunities

Bachelor

- Adaptation Luigi/LAW workflow to NLOJet++ for 1-, 2-, 3-jet NLO predictions

- Adaptation of Luigi/LAW workflow with NNLOJET to HPC and other computing resources

- Extension of Luigi/LAW workflow (MCRun) for nonperturbative or electroweak corrections to Pythia or similar

- Merging of fastNLO interpolation bins

- Work on converter routines for fastNLO interpolation grids at NNLO

- Performance studies with fastNLO

- Studies with Rivet routines for data comparisons

Master & PhD

- 3D Z+jet analysis CMS Run 3 and PDF+α_s fits

- 3D Dijet production CMS Run 3 and PDF+α_s fits

- Dijet angular search for new physics (with UHH & Chicago) CMS Run 3

- R3/2, R4/3 incl. jet cross section ratios and strong coupling determination

- On-the-fly creation of interpolation grids

- Validation of Sherpa MCgrid interface to fastNLO interpolation grids

- Creation of Herwig7 interface to fastNLO (with ITP Stefan Gieseke & Wien Simon Plätzer)

- Studies with fitting code of xfitter, NeuralNetPDF and/or Alpos for simultaneous fits of α_s and PDFs to multiple published datasets