

## **QCD at hadron colliders (prof. Giuseppe Bozzi)**

- Introduction to QCD: Feynman rules, scattering amplitudes, phase space integrals, cross sections
- Curing UV divergences: running couplings, running masses and renormalisation scale
- Curing IR divergences: parton distributions, DGLAP equations and factorisation scale (with a discussion of global PDF fits)
- Fixed-order perturbation theory: main computational techniques (with a discussion of available codes)
- All-order calculations: parton shower and analytic resummation (with a discussion of available codes)
- Matching of fixed-order and all-order calculations: LO and NLO recipes (with a discussion of available codes)