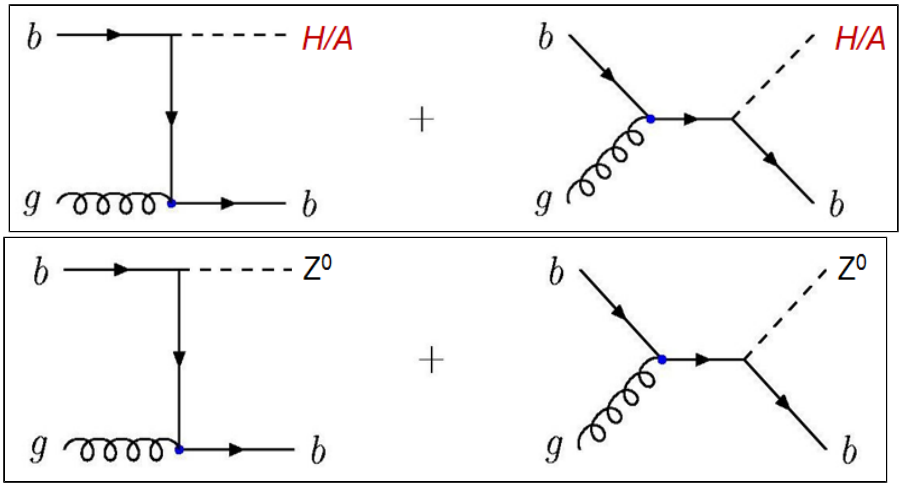
Study of bH and bZ production

As a related study for the searches of SUSY Higgs H/A production in associate with a b quark and h/H/A decaying to bbbar:



the observation of the analogous Standard Model production of b+Z(Z->bbbar) can be a very interesting associated analysis to establish the analysis infrastructure and calibrate reconstruction efficiencies and constrain production model uncertainties for the b+h (h is the lightest Higgs with properties close to SM Higgs) analysis. Observing Z->bbbar will also be an important milestone of its own right and lending a powerful avenue to calibrating b jet energy. The possible project tasks are expected to be among the following research topics:

1. The suitable analysis strategies at different Pt ranges - how often h/Z to bbbar decays are distinct/merged b/bbar jets ?
2. The recoil b Pt spectrum (also h/Z Pt spectrum) research from various MC generators and MCFM calculations and existing measurements to better understand the workable cross section and its uncertainties for different Pt regimes.
3. bZ production data analysis: background levels and sensitivity for analyses at different Pt regimes.

Literature:

- b+Z production at 7 TeV (ATLAS, 36ipb, 2011)
- b+Z/gamma production at 7 TeV (CMS, 2.2ifb, 2012)
- Search for b' -> Z + b (ATLAS, 2ifb, 2012)

Contact: Su Dong, Emanuel Strauss