

FCNC single top quark production (tqg)

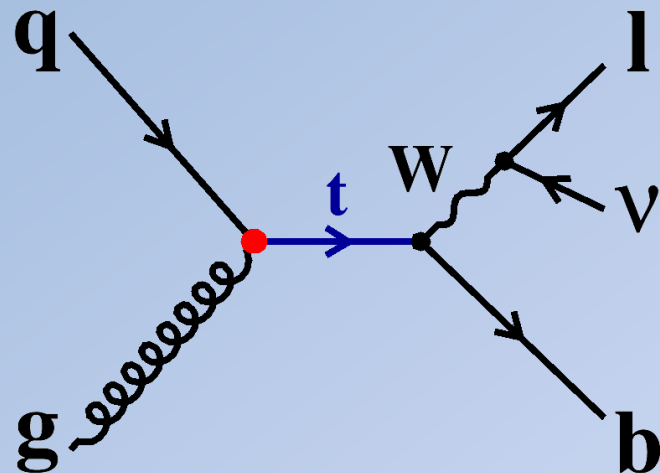
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BERGISCHE
UNIVERSITÄT
WUPPERTAL

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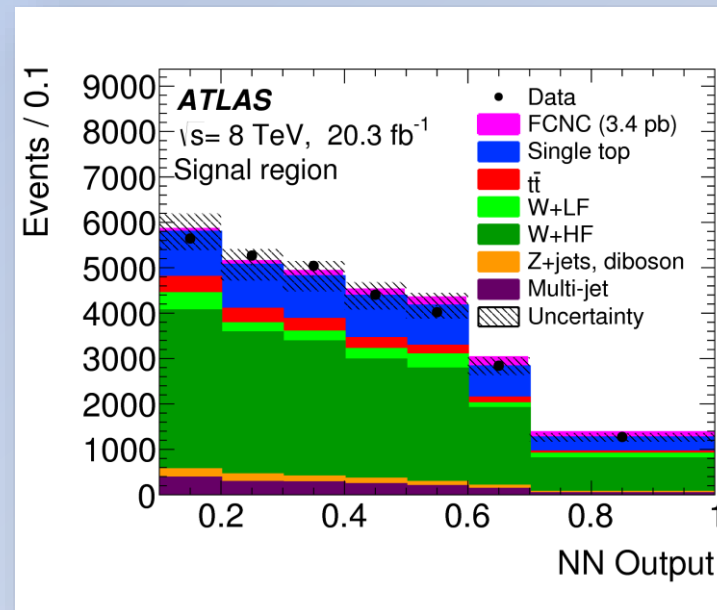
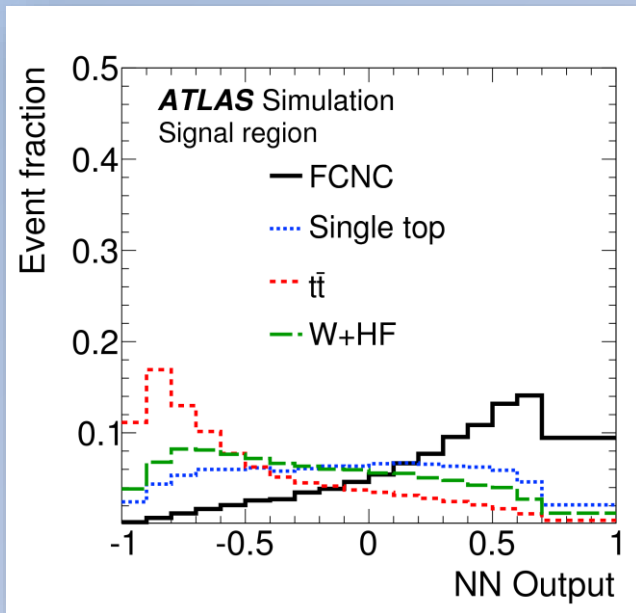
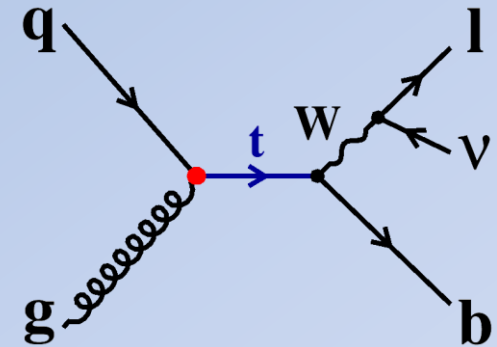


- Production of a top quark through a ugt or cgt couplings
- Concentrating on 1 jet bin \rightarrow unique access to the couplings, i.e. no mixing with others.

FCNC single top quark production

Analysis strategy:

1. Event selection:
1 charged lepton, MET, 1 b-tagged jet
2. NN to separate signal from background
3. Likelihood fit to the full NN distribution
4. Limit on cross section \rightarrow limit on coupling \rightarrow limit on BR



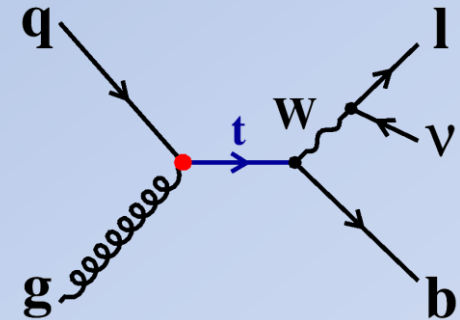
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Upgrade strategy:

Extrapolate from 13 TeV analysis

or

Using dedicated MC samples for signal and background

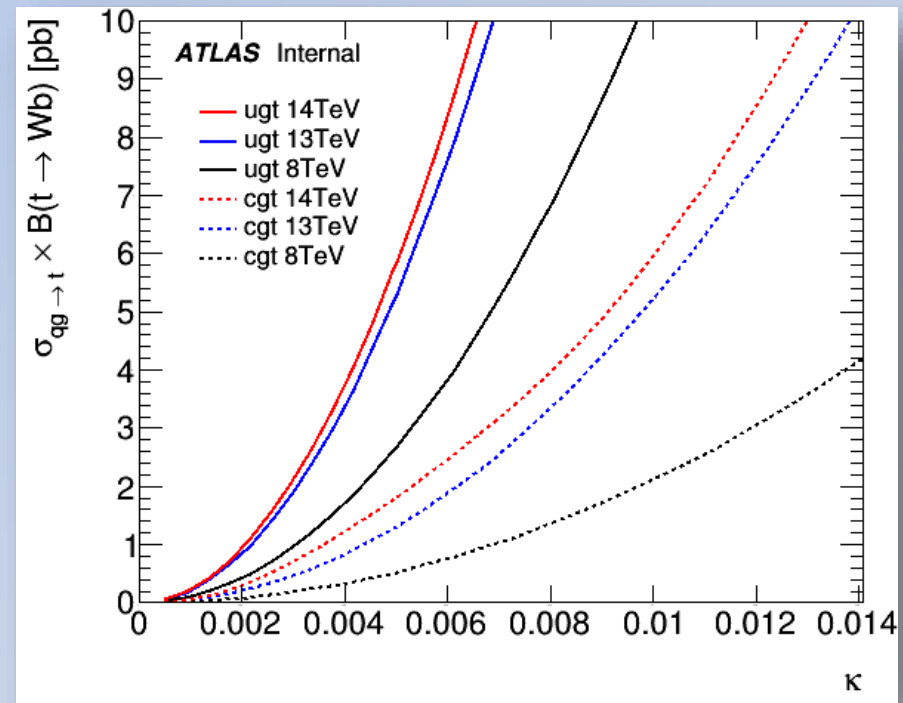


Signal sample:

- Not possible @ NLO
- **MEtop** : approx NLO
using top p_T matching
- **MG5_aMC@NLO**: approx NLO
TopFCNC with CKKW-L matching

Main backgrounds:

- t-channel single top
- $t\bar{t}$
- W+bb
- Multijet → might be tricky



Manpower: Dominic Hirschbühl + bachelor / master student(s)