Machine Learning in Higgs searches at ATLAS experiment

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About me

Born and raised in different parts of India…….

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About me

- Born and raised in different parts of India…….

- Integrated Masters in Physics 2014-2019: NIT Surat, India

  - Master Thesis: University of Edinburgh (Searches for Heavy right-handed Neutrinos and W bosons with ATLAS)

- **PhD: 2019-2022**

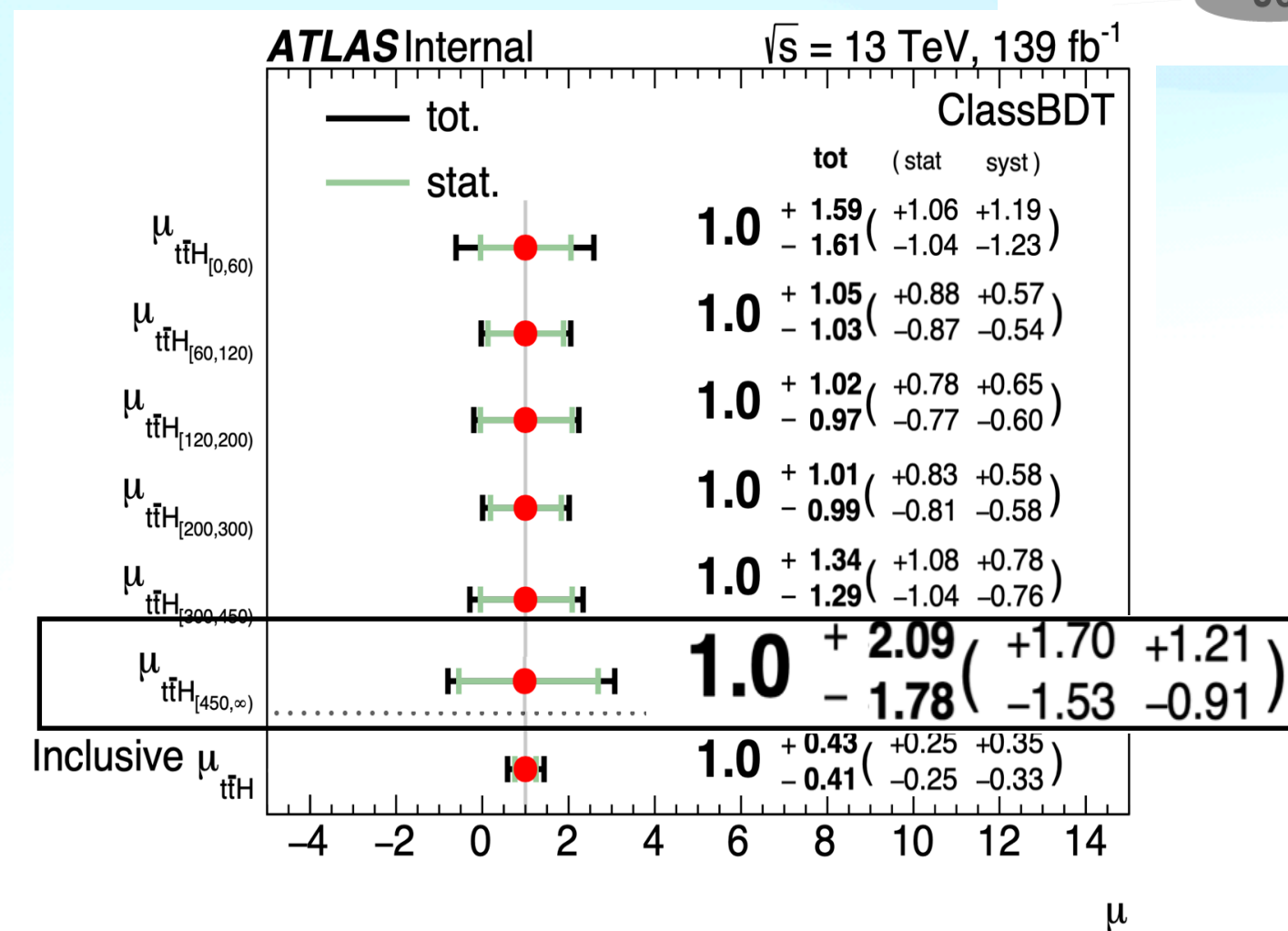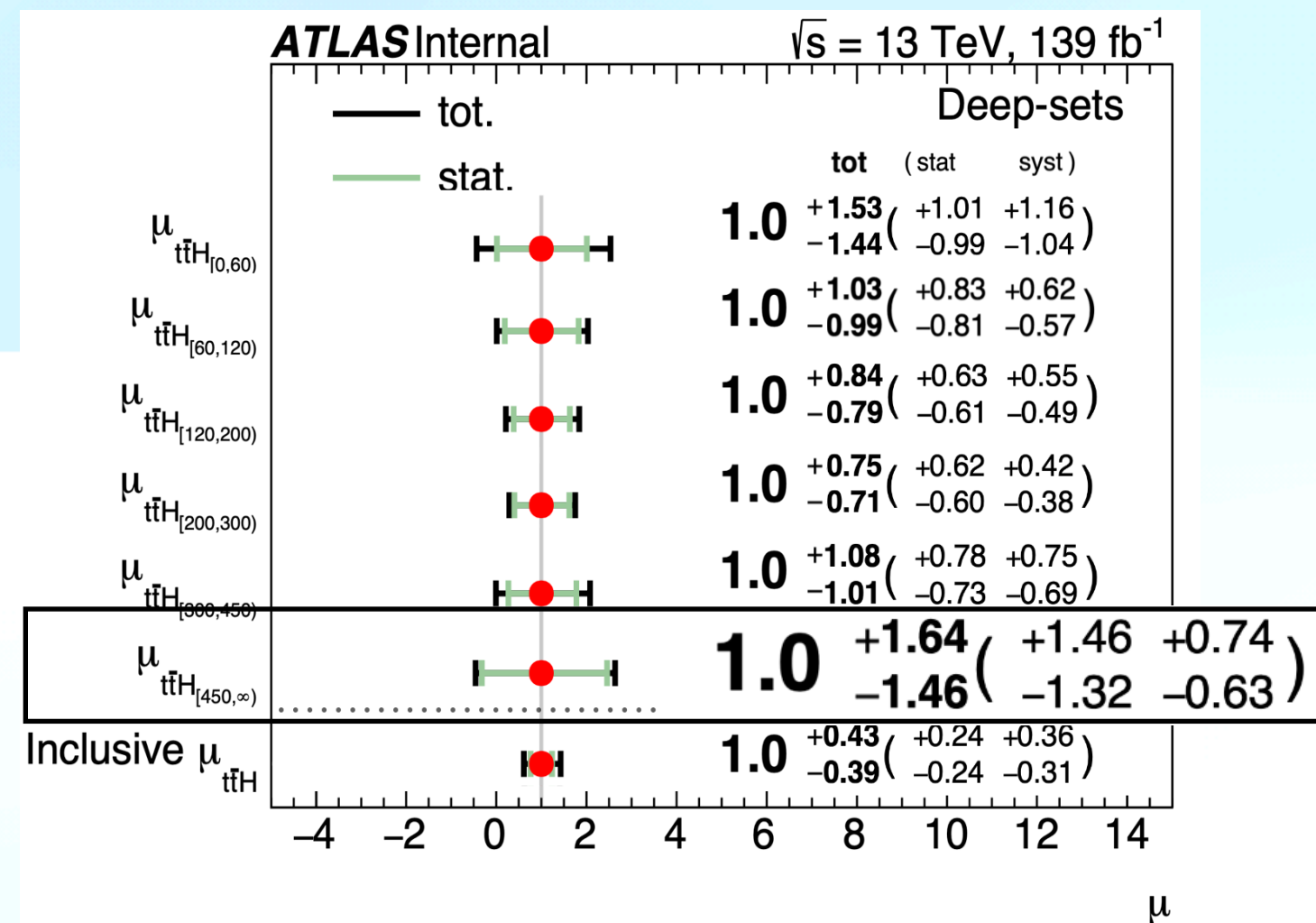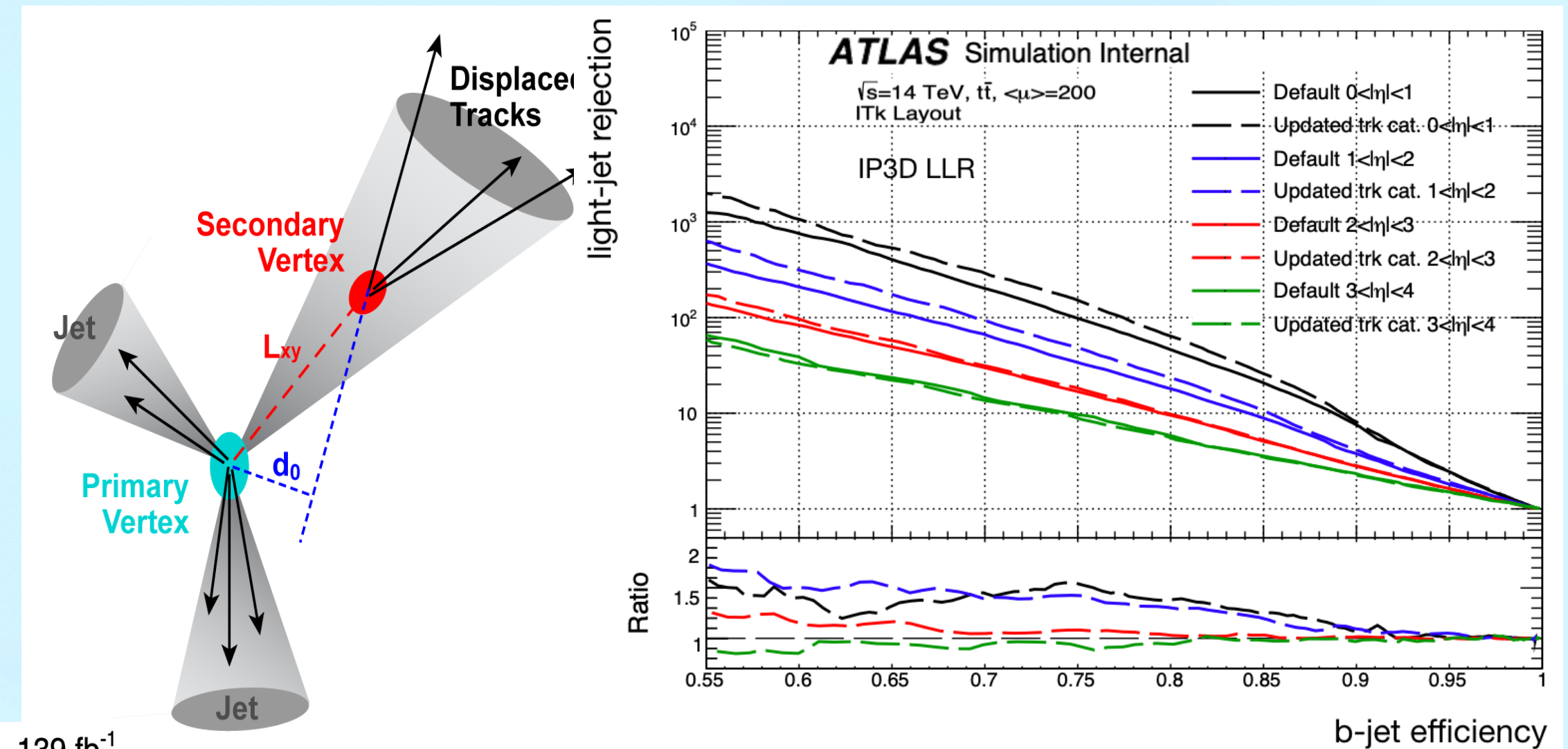**Centre de Physique des Particules de Marseille, France**

(Defended Nov 2022)

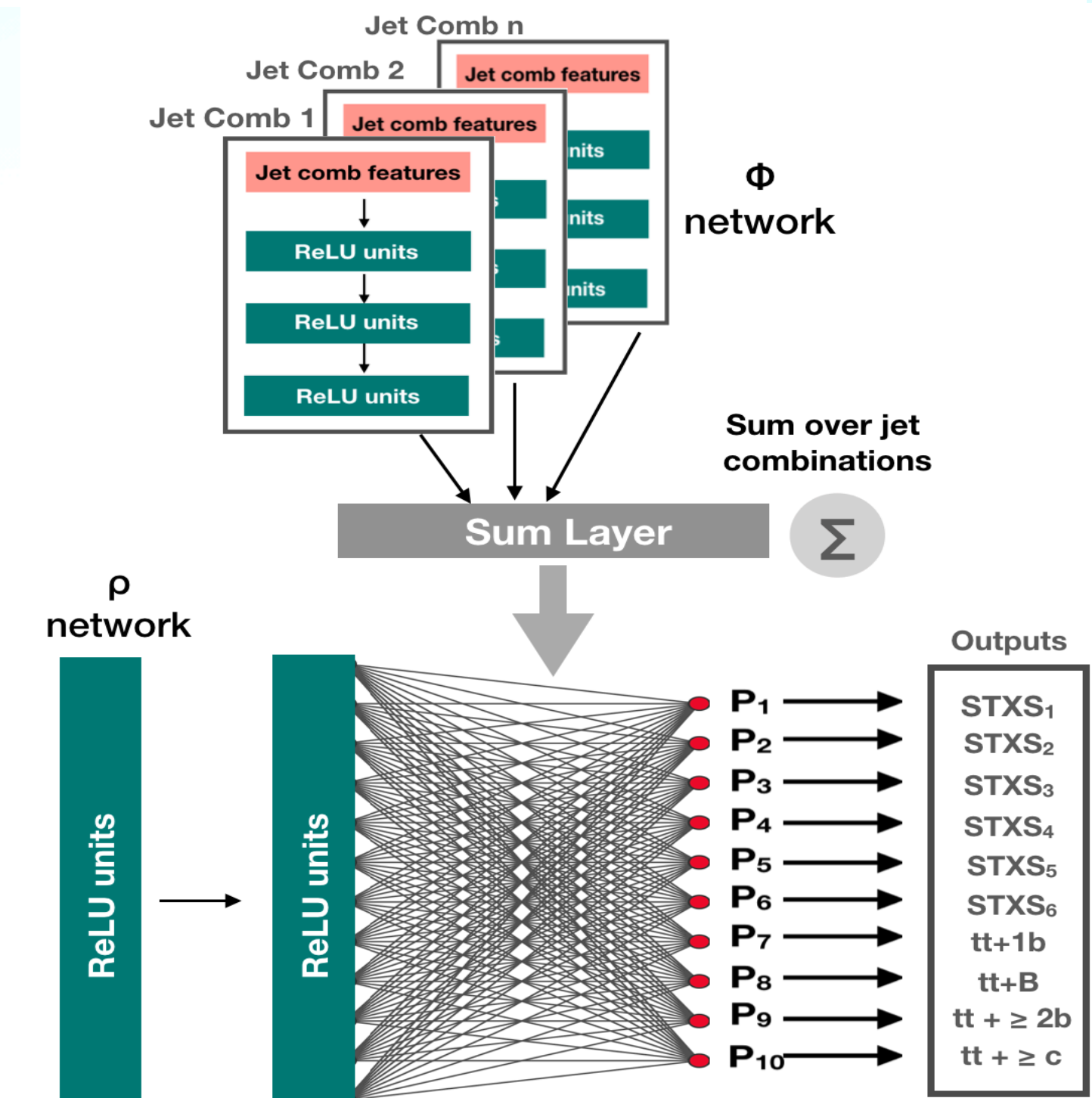- **QU PostDoc at ATLAS DESY - started March 2023**

PhD work

– Maintain and improve the current Run 2 **b-tagging performance for the ITk**

– **Multi-Variate analysis methods using machine learning in ttH(H→bb) analysis**
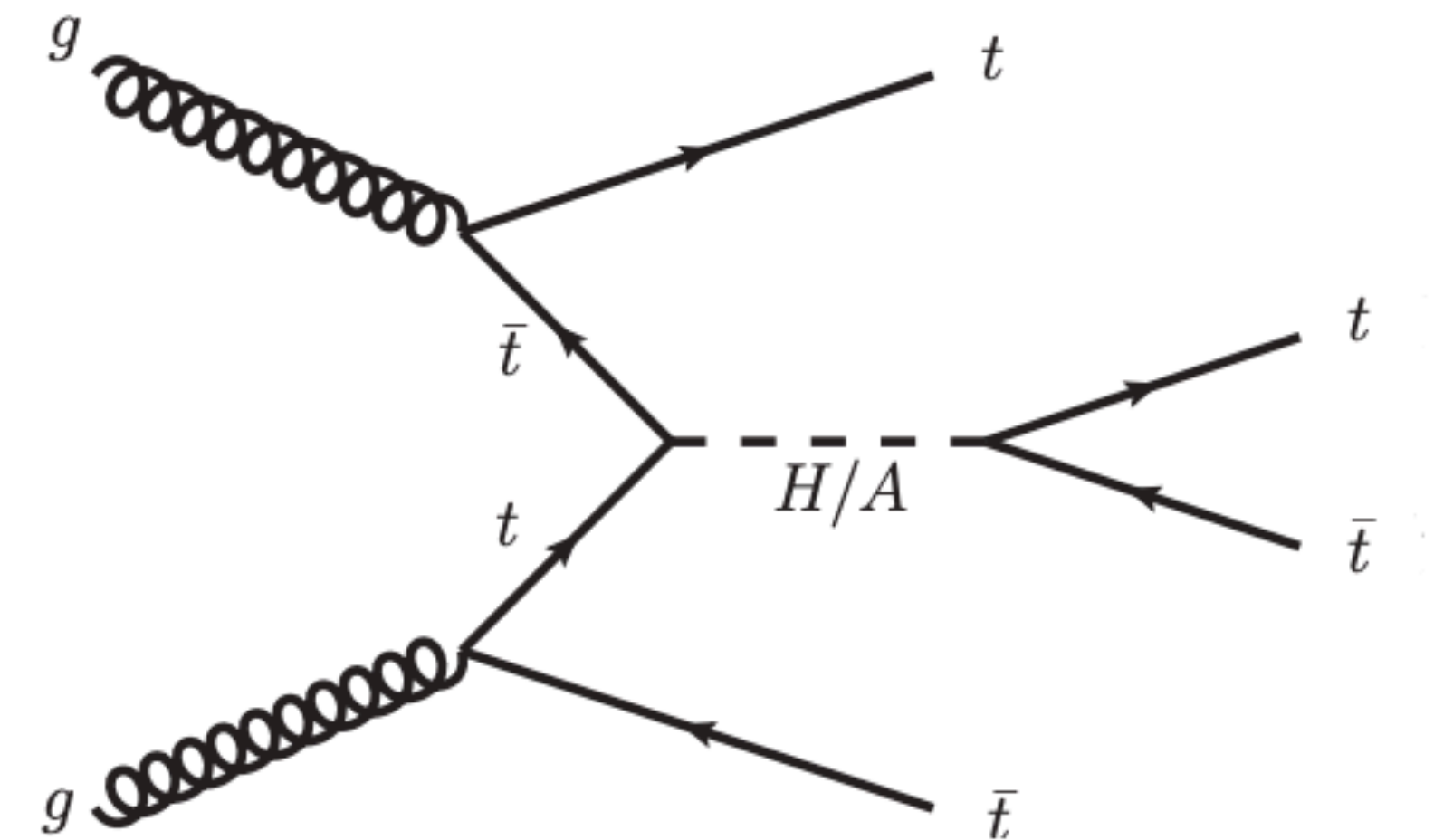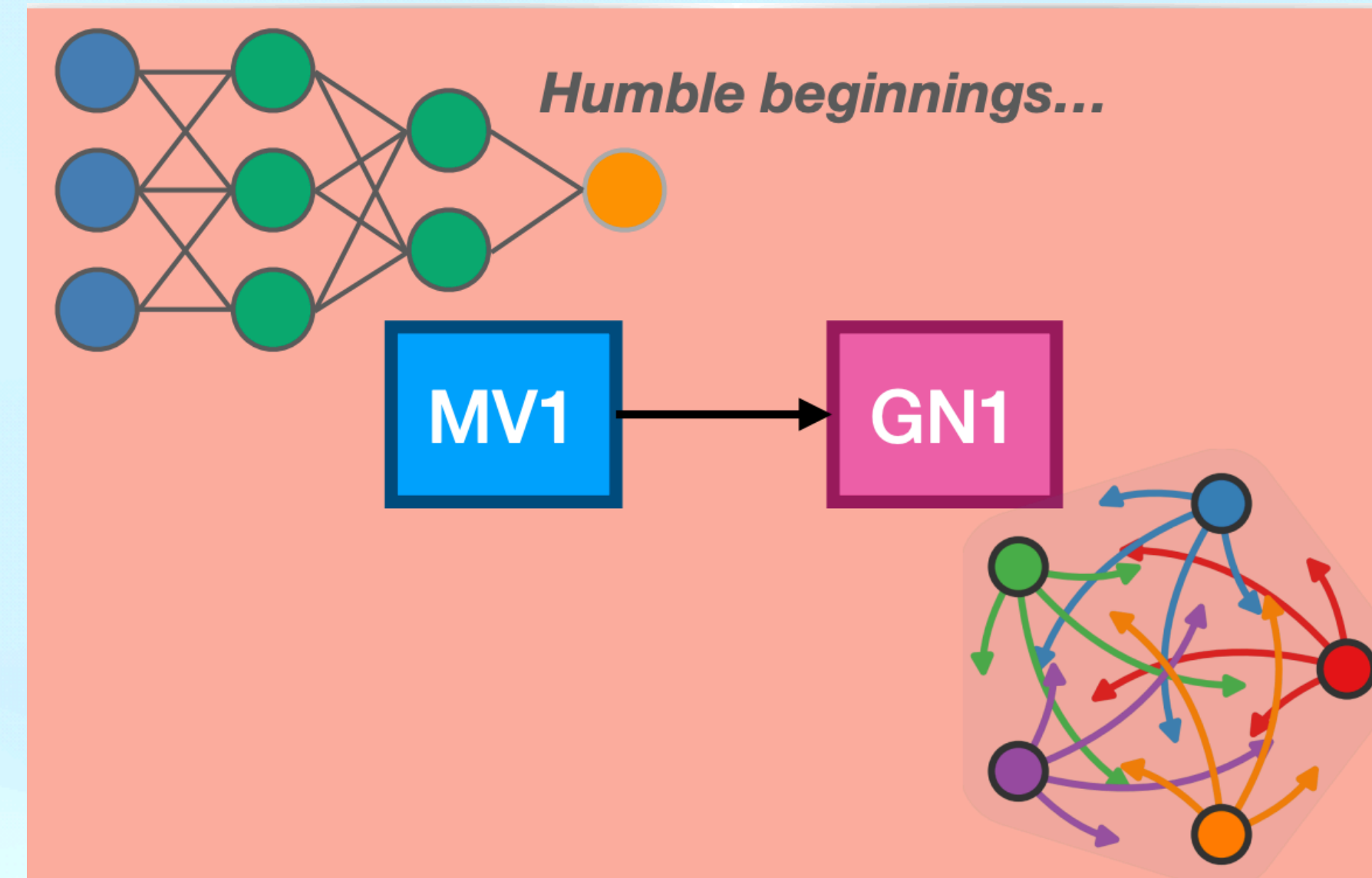

• Deep-sets to perform reconstruction and classification of signal and background simultaneously

• Improvement between **3%** and **35%**

Current Work

Humble beginnings…

– **Continue with b-tagging performance**

  – Extending the flavour classification with latest b-tagger GN2

– **BSM 4Top analysis**

  – Study the underlying dynamics of electroweak symmetry breaking and possible connections to dark matter

  – **Work with the optimisations: top reconstruction with GNN**

Thank you!