

Tagging Boosted $H \rightarrow b\bar{b}$ Decays

FH Fellow Meeting

Jon Burr
February 1st

About Me

Background, past activities

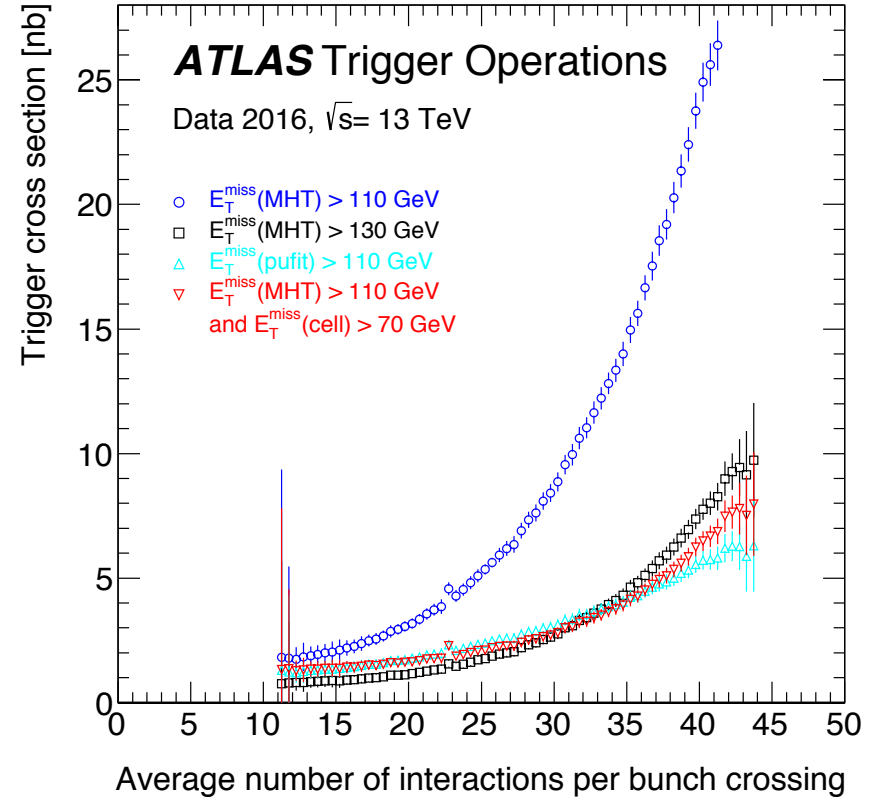
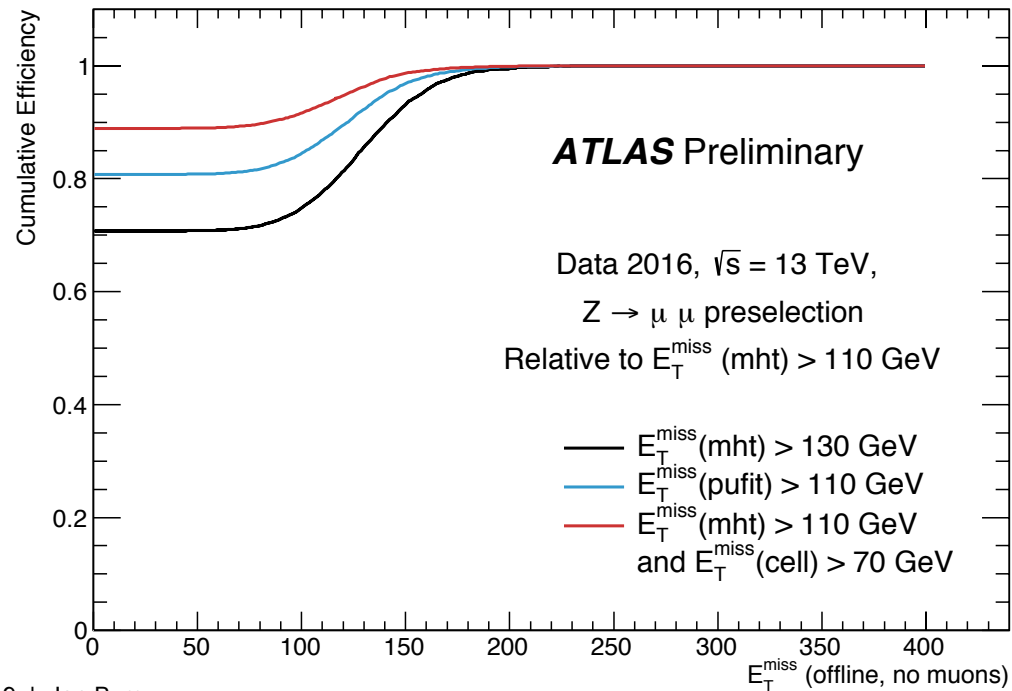
- Born and grew up in York
- MPhys and DPhil in Oxford
 - Including 15 months at CERN



Previous Research

Triggering on missing transverse energy in high pile-up events

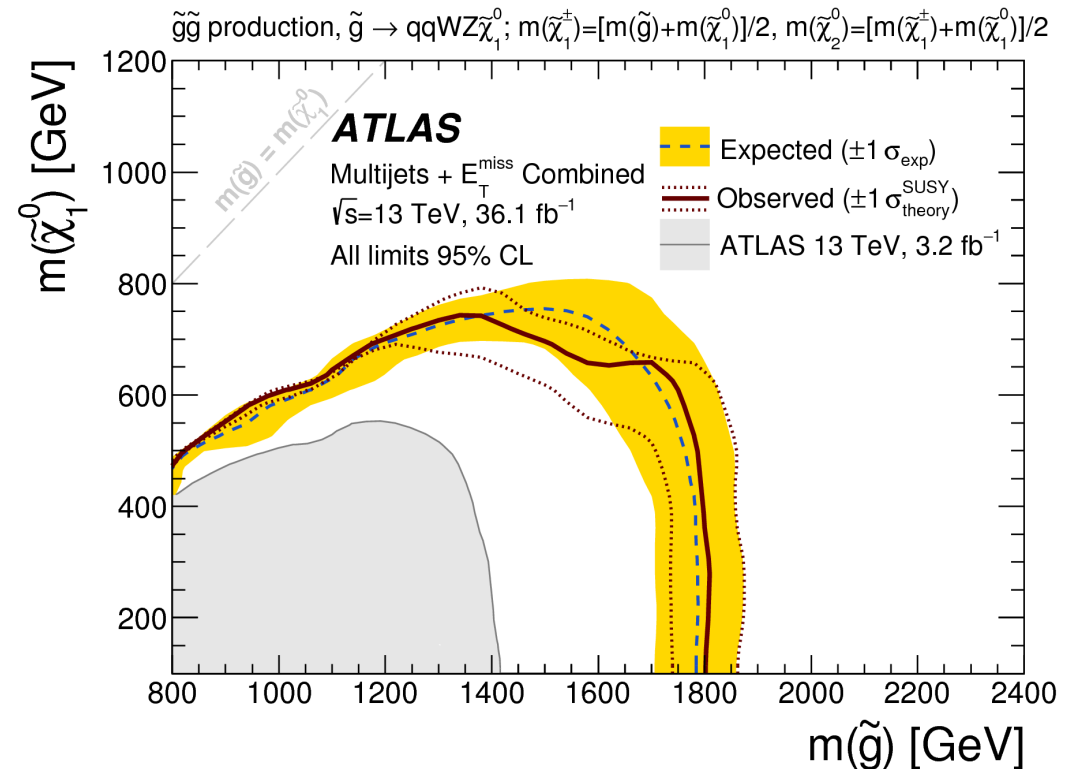
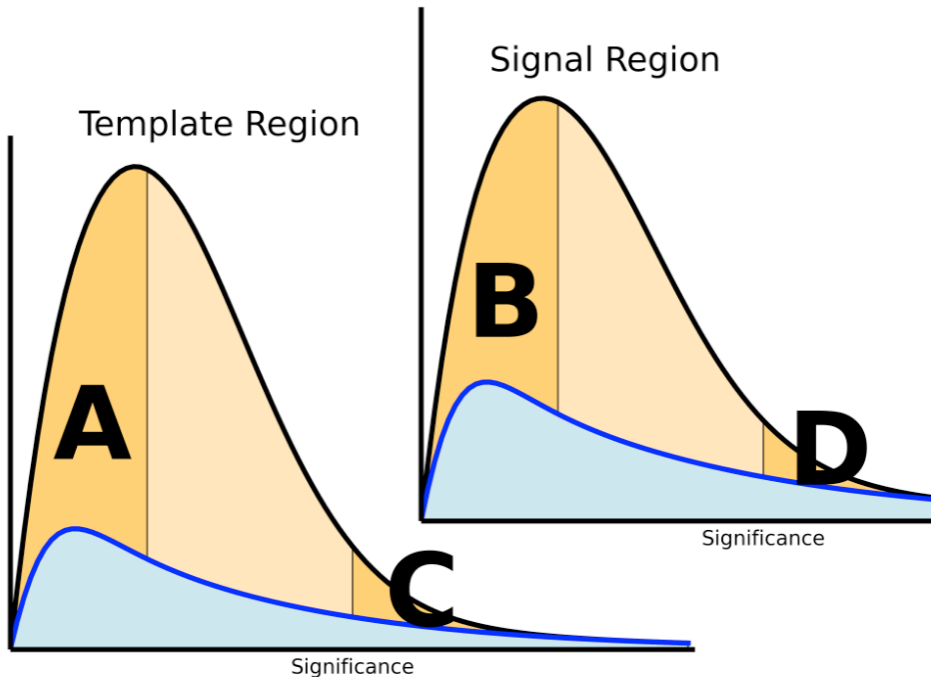
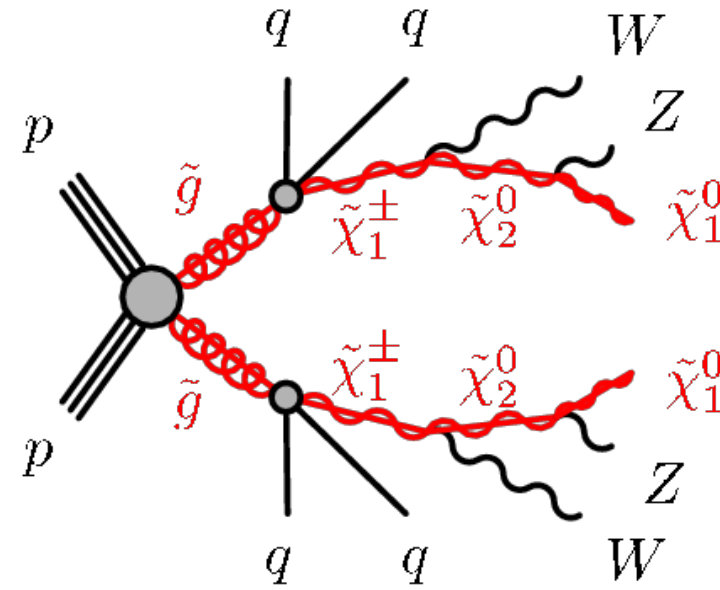
- MET: negative vector sum of transverse energy, measure what you didn't see
- Trigger: decide which events to write out, rate is key
- Major background: mismeasurement, hugely pile-up sensitive
- High pile-up => high rates => high thresholds => restricts physics



Previous Research

SUSY Search in events with high jet multiplicity

- Some SUSY scenarios predict long decay chains
- If LSP is neutral => dark matter candidate
- Experimental signature - many jets + MET

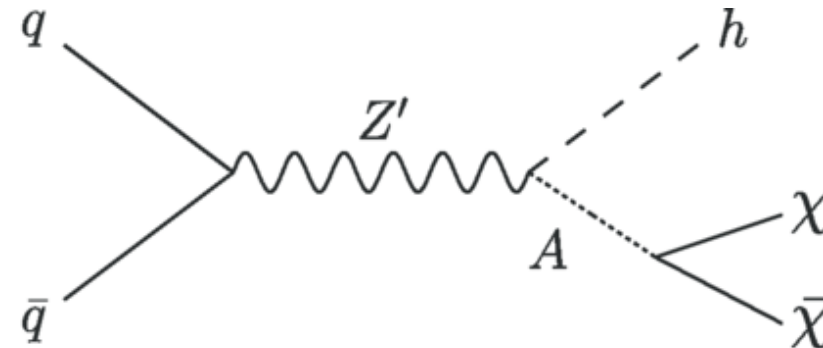
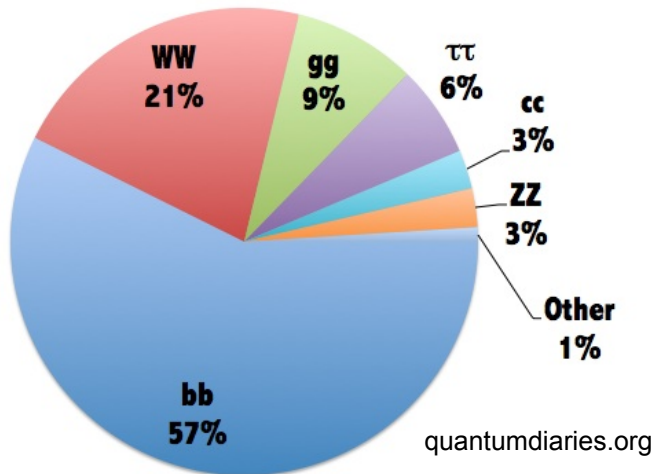


My Current Work

H→bb tagging calibration

- Higgs is a strong focus of ATLAS physics program
 - Measure properties
 - Portal to dark matter?
- bb channel has the highest cross-section
- Tag H→bb jets for use in analysis
- Calibration - measure tagger performance on Z→bb jets
 - Produce systematic errors.

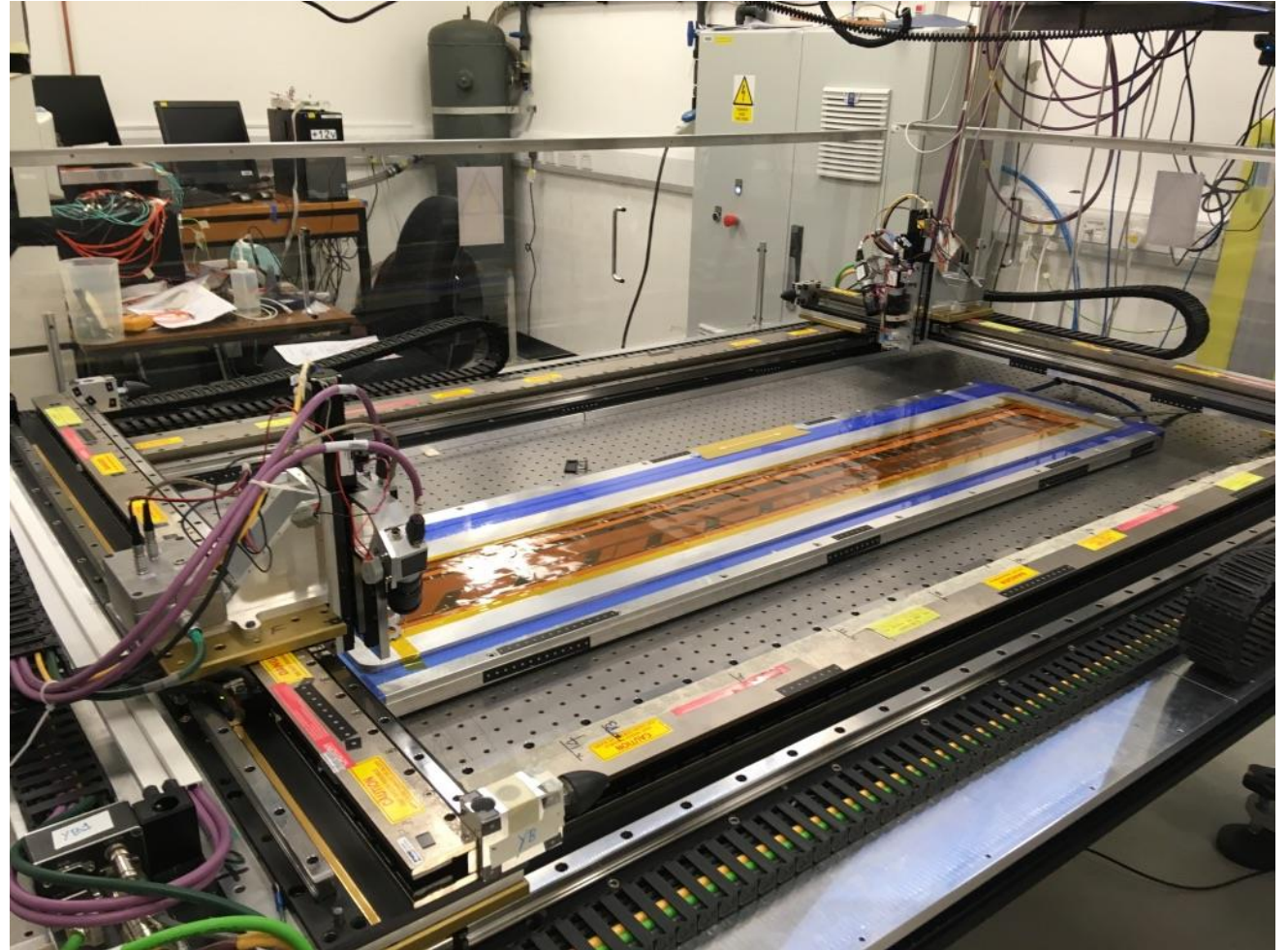
Higgs decays at $m_H=125\text{GeV}$



My Current Work

BUS tape testing robot

- ATLAS upgrade project for the silicon detector
- Modules inside the detector need to talk to the outside world - BUS tapes
- Need to make sure that the connections work
 - Everything that *should* connect does
 - Nothing that *shouldn't* connect does



My Favourite Plot

The importance of butter for a successful marriage... or not?

Divorce rate in Maine correlates with Per capita consumption of margarine

