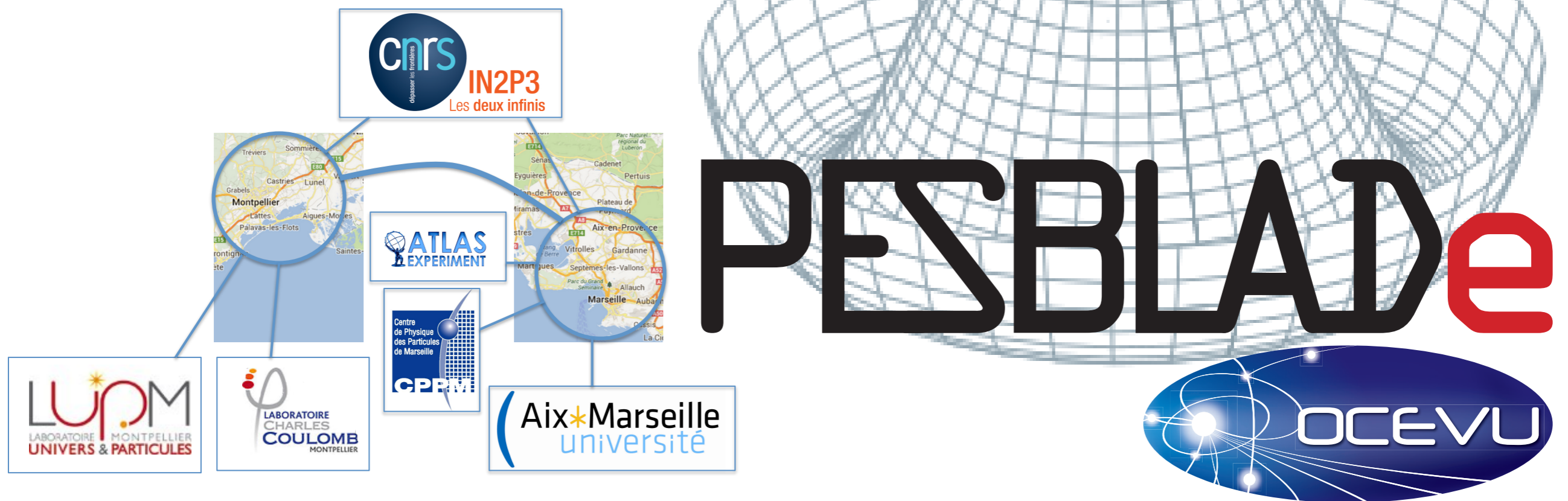


Probing the nature of EWSB at the Lhc with the Atlas Detector

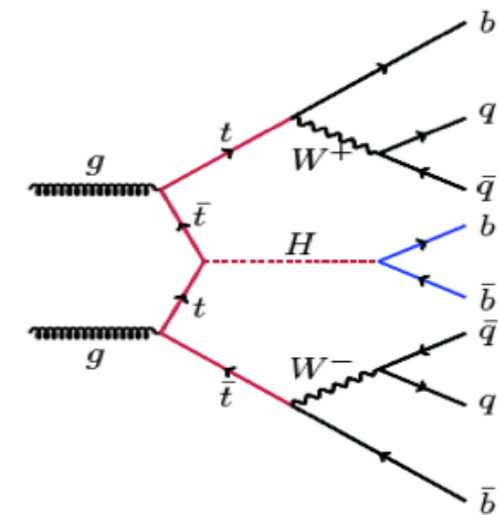
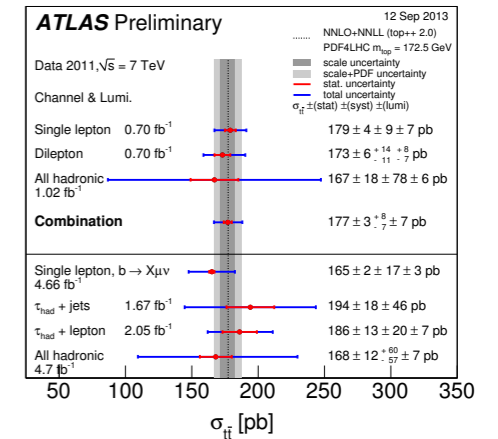
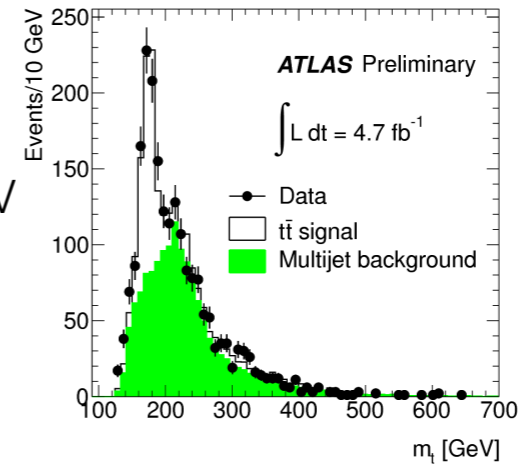


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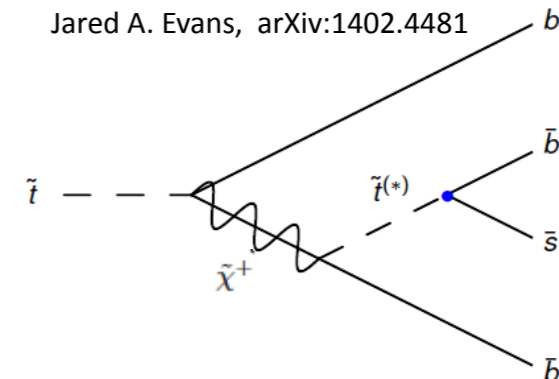
fully hadronic final states

- CPPM has lead fully hadronic analysis within ATLAS
 - Measurement of $t\bar{t}$ production in fully hadronic final states at $\sqrt{s}=7$ TeV
 - Main background multi-jet multi-b-jet production
 - development of data driven technique to estimate it
 - Large systematic uncertainty from detector-related quantities (Jet energy scale, b-tagging calibration,...)
 - Search for $t\bar{t}H$ in fully hadronic final states
 - Extension of $t\bar{t}H(H \rightarrow bb)$ in lepton+jet final state
 - Measure of $t\bar{t}H \rightarrow$ direct measurement of top Yukawa coupling
 - Able to double statistics of $t\bar{t}H$ for $H \rightarrow bb$ final state
 - Advance wrt fully hadronic top measurement:
 - able to use $t\bar{t}b$ events to control systematic uncertainties
- Thanks to the knowledge of IFAC on SUSY phenomenology we started looking at possible new physics scenarios in this fully hadronic final states
 - **RPV SUSY** signatures in final states with jets and b-jets

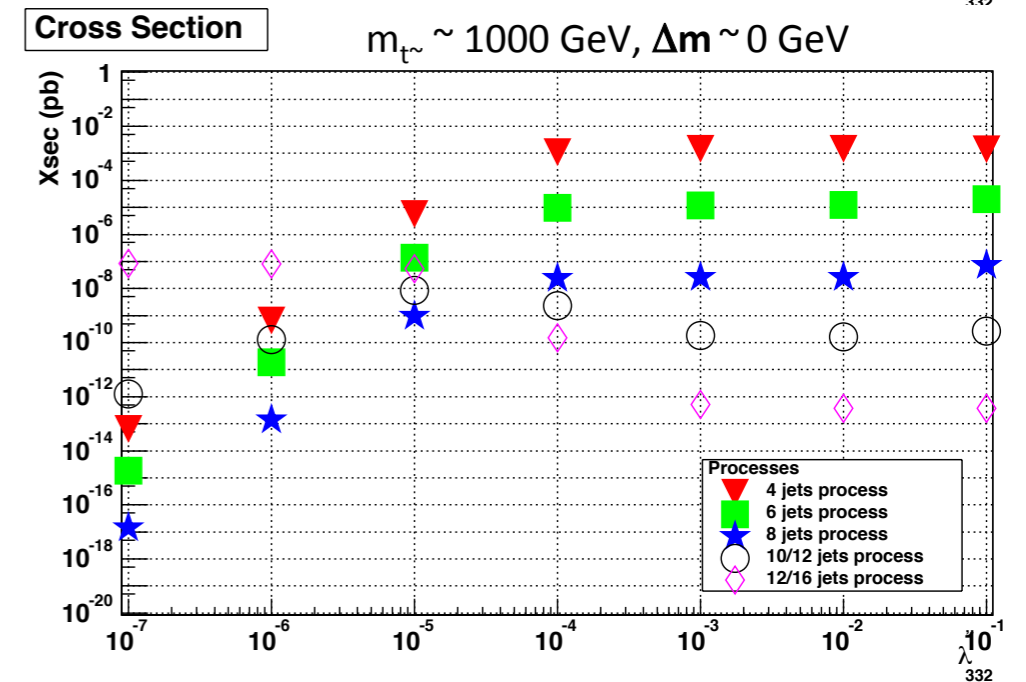
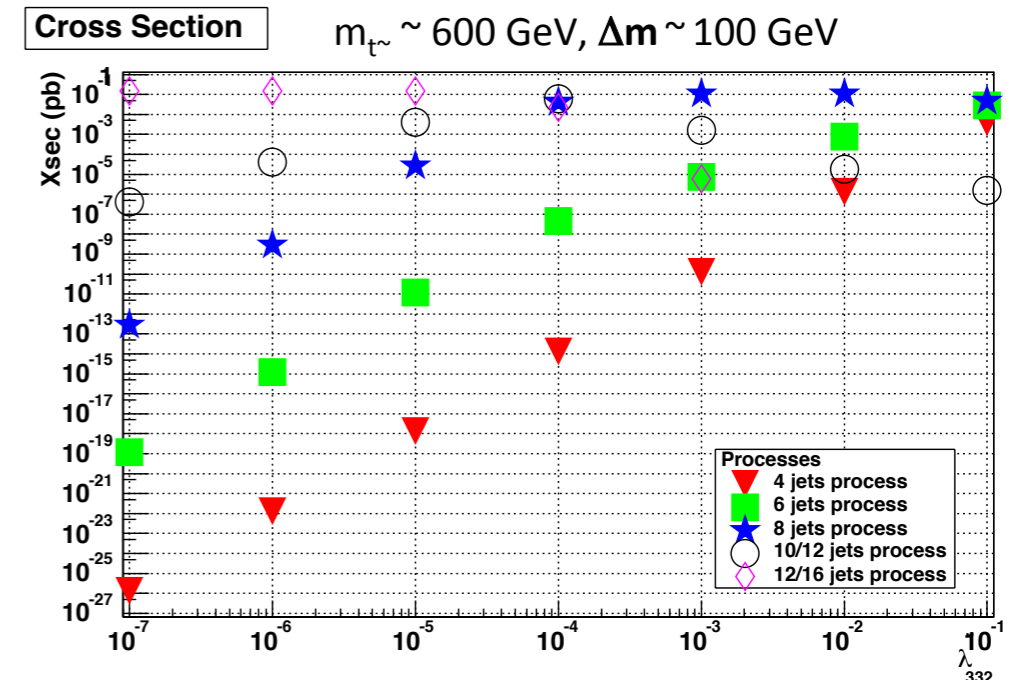


A swarm of b's

Jared A. Evans, arXiv:1402.4481



- The RpV SUSY model offers a variety of interesting final states not yet explored by experiments
- characterized such channels for $500 \text{ GeV} \leq m_{\text{stop}} \leq 1 \text{ TeV}$
- strong sensitivity to the RpV coupling λ''_{332}
- significant contributions to SM ttH analysis and can be looked at directly in LHC Run 2 data
- More on this during Sara's talk tomorrow



- Fully characterisation of RpV parameter space relevant to LHC is ongoing
- Run 2 will give the possibility to look at this signatures
 - Contribution to fully hadronic $ttH(H \rightarrow bb)$ final state in the whole spectra of λ''_{332}
 - Lepton-based $ttH(H \rightarrow bb)$ signatures sensitive for small RpV regime $\rightarrow \lambda''_{332} (10^{-7} - 10^{-5})$
- A student is requested to perform the analysis using ATLAS data
 - perform the analysis looking at signatures contigues to fully hadronic final states
 - Full fit using lepton+jets and hadronic ttH analysis to constrain λ''_{332}