

Have a look at the ATLAS 1/2-lepton paper: <http://arxiv.org/abs/1501.03555>

- Based on the background estimates in the single-bin hard 1-lepton signal regions in Table 14 calculate the model-independent upper limits. Compare your result to Table 16.
- Have a look at the detailed results per each bin in binned hard 1-lepton 3-jet, 5-jet and 6-jet signal regions in Auxiliary tables 11 - 13 in

https://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/SUSY-2013-20/hepdata_info.pdf.

- ▶ This analysis does perform a shape fit where the binned 3-jet, 5-jet and 6-jet signal regions are fitted simultaneously.
- ▶ Implement a simplified version of this shape fit.
- ▶ Your config file should contain:
 - 3 channels (one per binned signal region), fitted simultaneously.
 - Various buildHisto functions to build histograms for the **total** background estimates, the data and the example signal point.
 - A systematic uncertainty (which should you take?) reflecting the uncertainties on the background estimates reported in the tables.
- ▶ With this setting try to reproduce a model dependent signal fit and run '-p'. Can you exclude the reference signal point?
- ▶ Compare this to the results in the Figure 19 (top) in the paper.