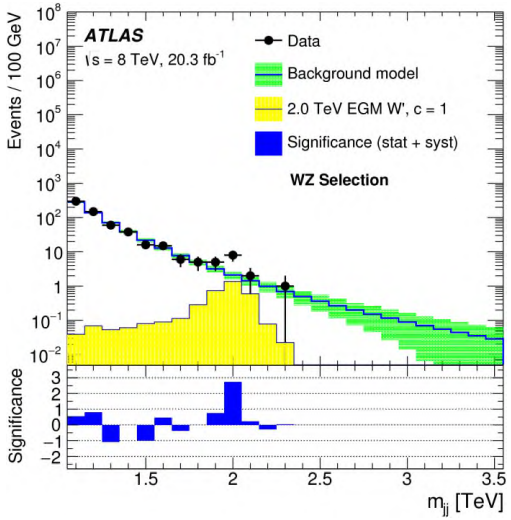
Diboson Decays $\rightarrow$ Hadrons

Excellent venue to test AND verify jet substructure tagging techniques

Interestingly ATLAS and CMS are using somewhat different tagging methods – will be informative to compare in detail

Expect current issues to be resolved quickly with enough Run 2 data; if signal survives, test with broad range of tagging methods (confirm the technique used by the other experiment)

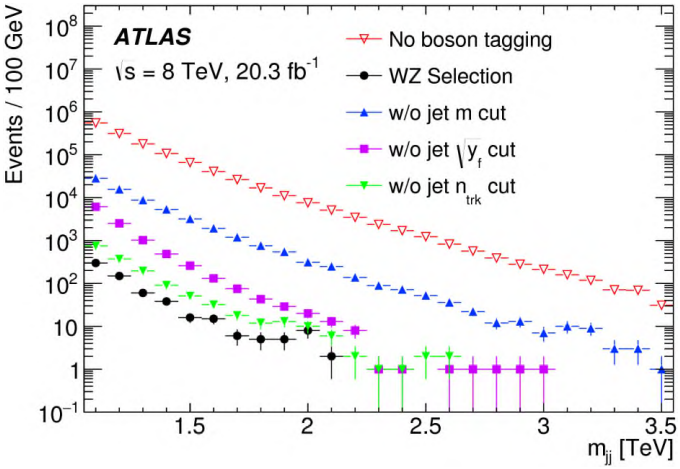
Comment on ATLAS analysis



Narrow structure and larger (2→3 sigma) significance seems to arise from "unexpected" shaping behavior of cut on ungroomed track number

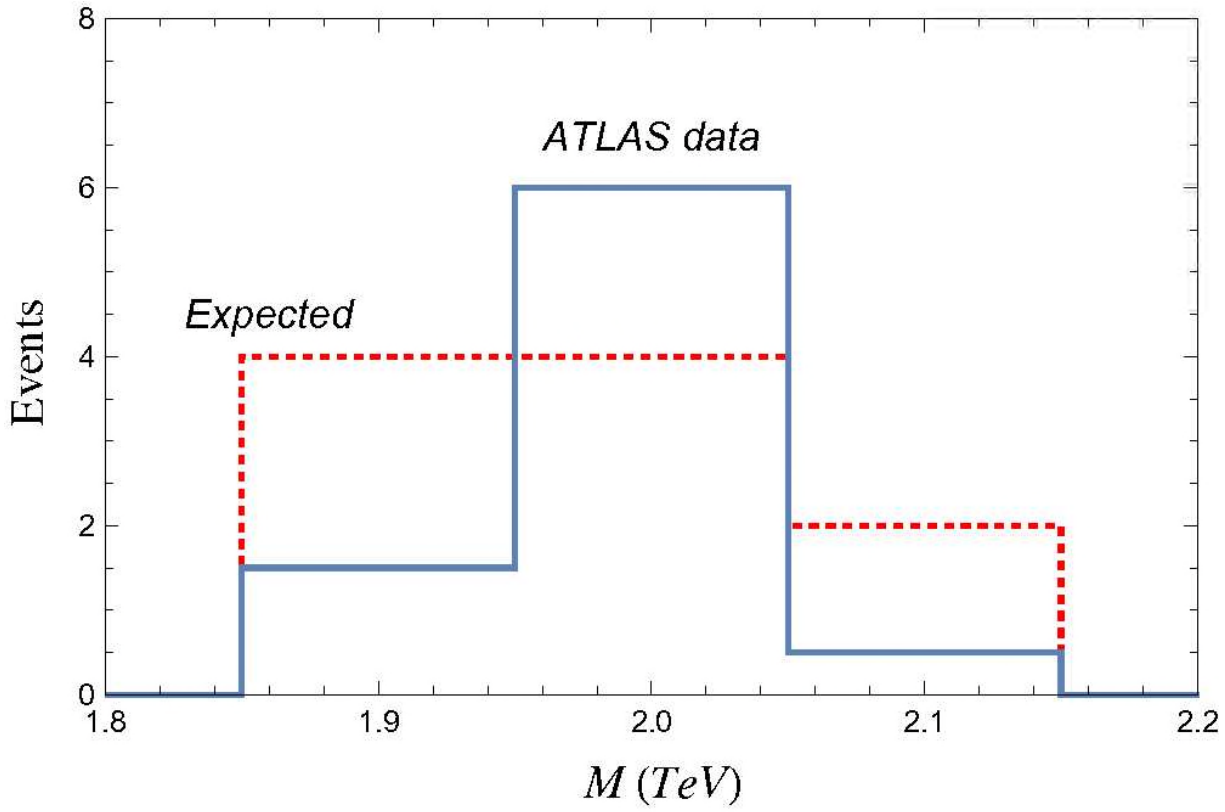
– impact of cut should vary smoothly with dijet mass, and not, by itself, yield a narrow structure

⇒ don't constrain theoretical models to narrow resonance case



Mass Bin (TeV)	1.8	1.9	2.0	2.1	2.2
Events/100 GeV w/o ntr cut	12	13	10	6	2
Events/100 GeV w ntr cut	5	5	8	2	1
Change due to ntrack cut	-7	-8	-2	-4	-1
Bkg model	5	3.5	2	1.5	1

If apply naively expected ntrack cut (smooth), resulting “bump” is broader with centroid at (somewhat) smaller mass.



From Bogdan