Summary

The $\chi_b(3P)$ states can be resolved with more statistics!

$\chi_b(3P)$ mass measurement using $\chi_b(3P) \rightarrow \Upsilon(1S)\gamma_{\rightarrow ee}$:

- $m(\chi_{b1}(3P)) = 10509.5 \pm 3.0(stat)\ ^{+5.3}_{-2.9}$ (syst) MeV/c^2
- ATLAS measured χ_{b1} and χ_{b2} mass barycenter for $\Delta m = 12$ and $r_{12} = 1$:
  $m(\chi_b(3P)) = 10530 \pm 5(stat) \pm 9(syst)$ MeV/c^2

  $\Rightarrow$ difference with this result~ 1.3 σ
- D0: $m(\chi_b(3P)) = 10551 \pm 14(stat) \pm 17(syst)$ MeV/c^2

$\chi_b(1P)$ mass splitting:

$\Delta m_{12} = 18.6 \pm 0.7(stat) \pm 0.2$ (syst) MeV/c^2

In agreement with PDG value: $\Delta m_{12} = 19.4 \pm 0.6$ (?) MeV/c^2

$\chi_{b1,2}(1P)$ relative production cross section:

in agreement with χ_c and theory but statistically limited