Bc -> J/ψ π at CDF with 2.2 fb^{-1}

(to be blessed July 12 2007)

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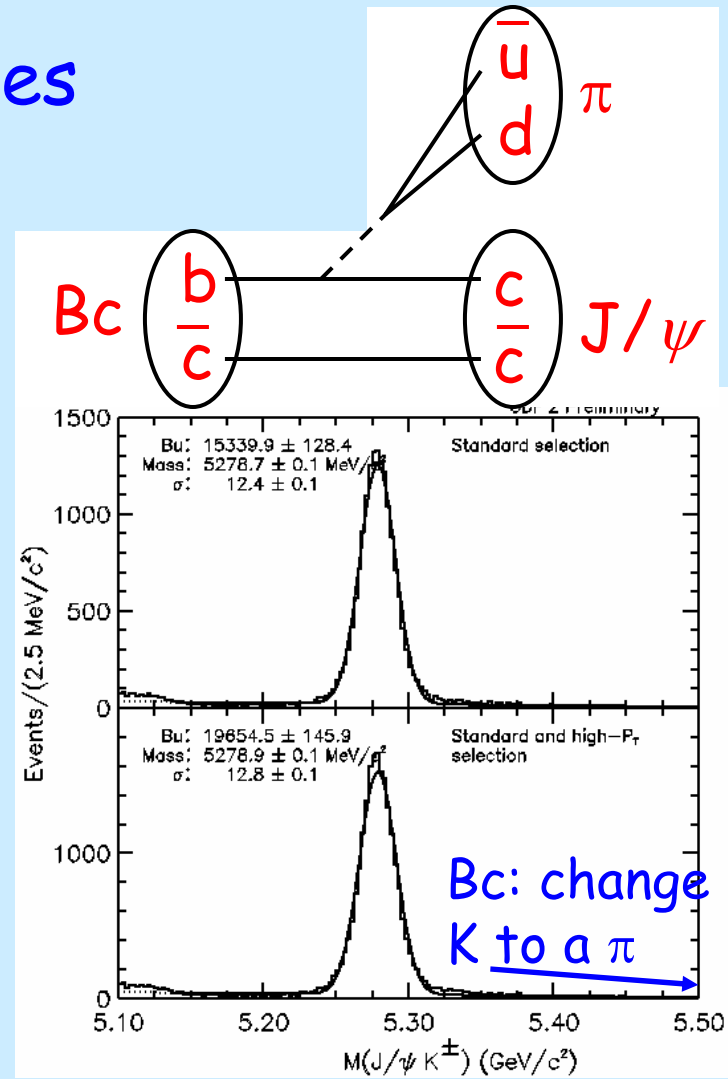
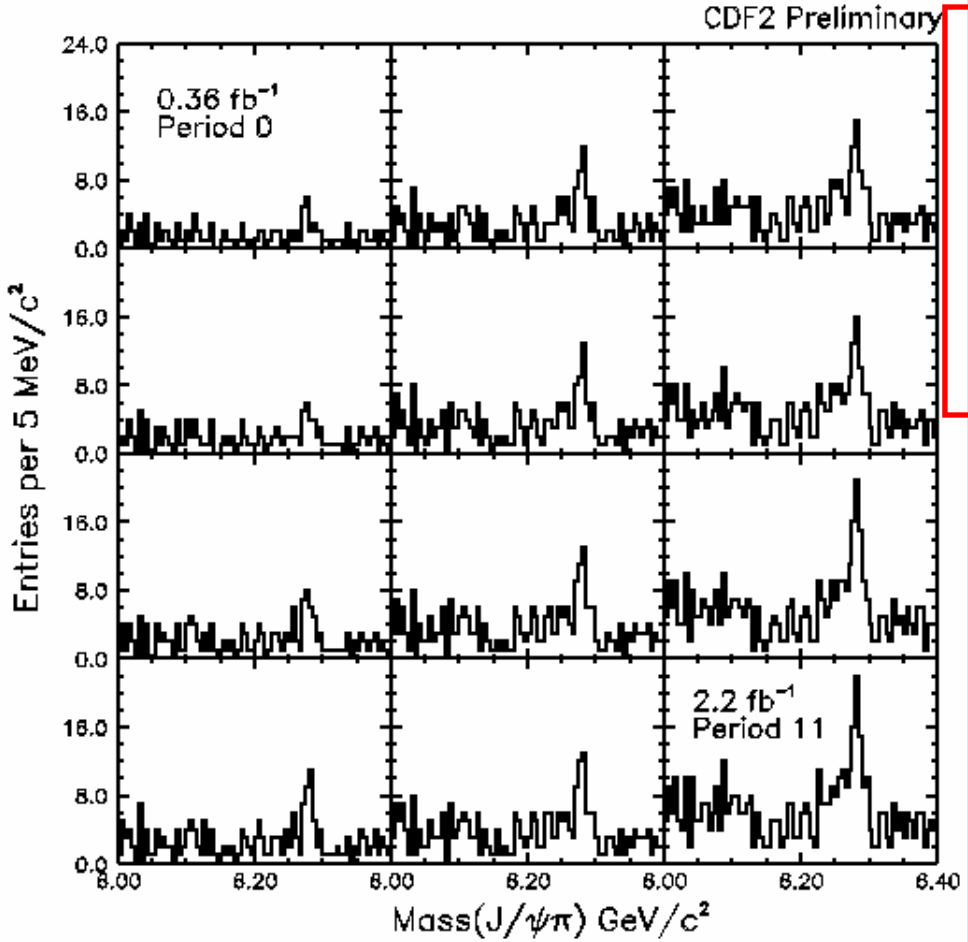
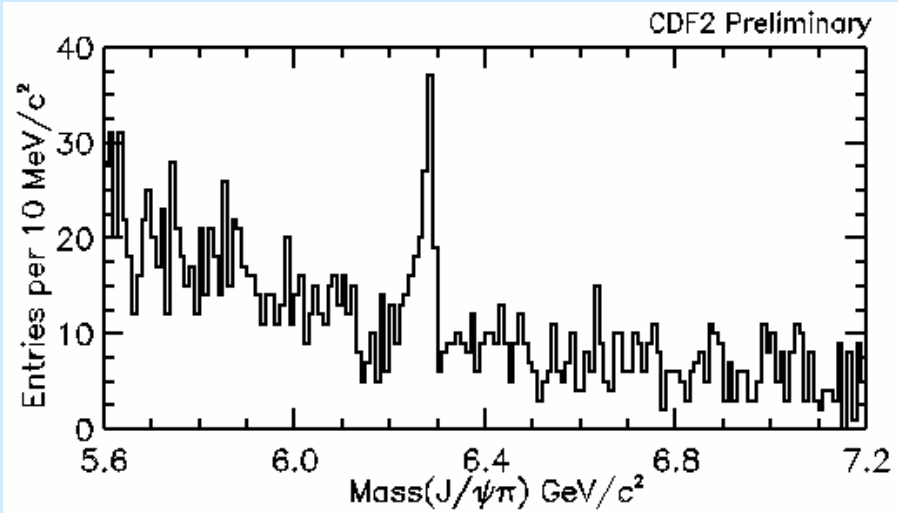
- Bc is not produced at B factories
- Full reconstruction allows for precise mass measurement
- New analysis
  - Tune selection on the data: Bu -> J/ψ K reference decay
  - After approval, "open box".
  - Wait for events to become a significant excess
  - Measure properties of the Bc



Bc -> J/ψπ



Poisson probability of 56.6 bkgd fluctuating to an excess larger than 137 is 1.1×10^{-19} corresponding to 9.0σ (assume 10 independent bins -> ~8.7σ)

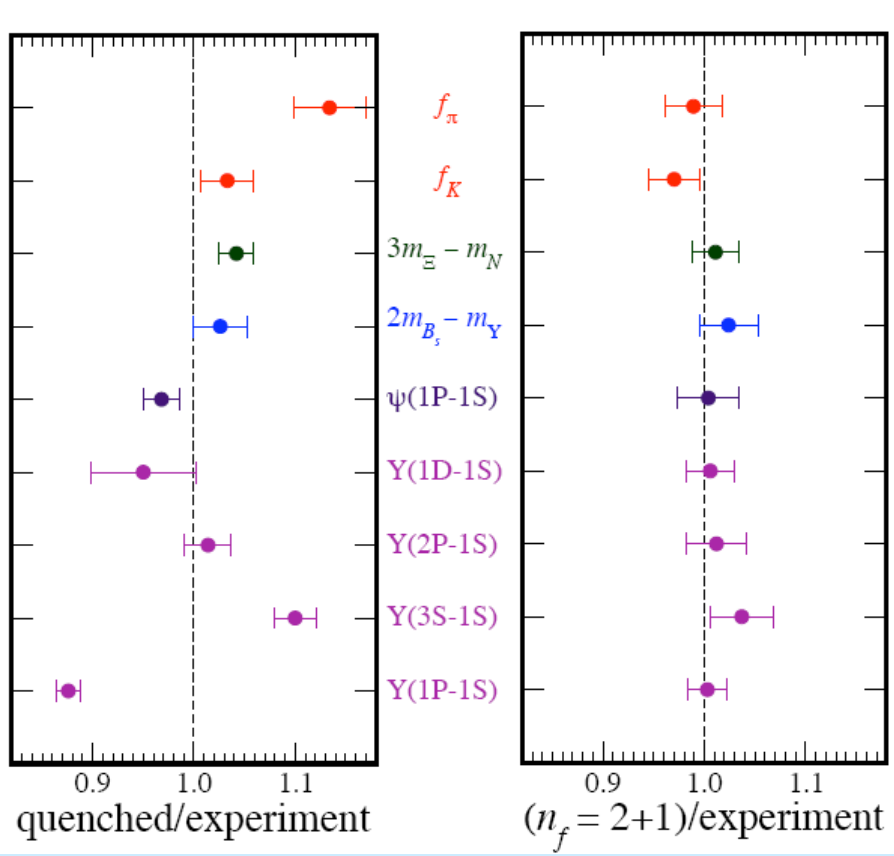


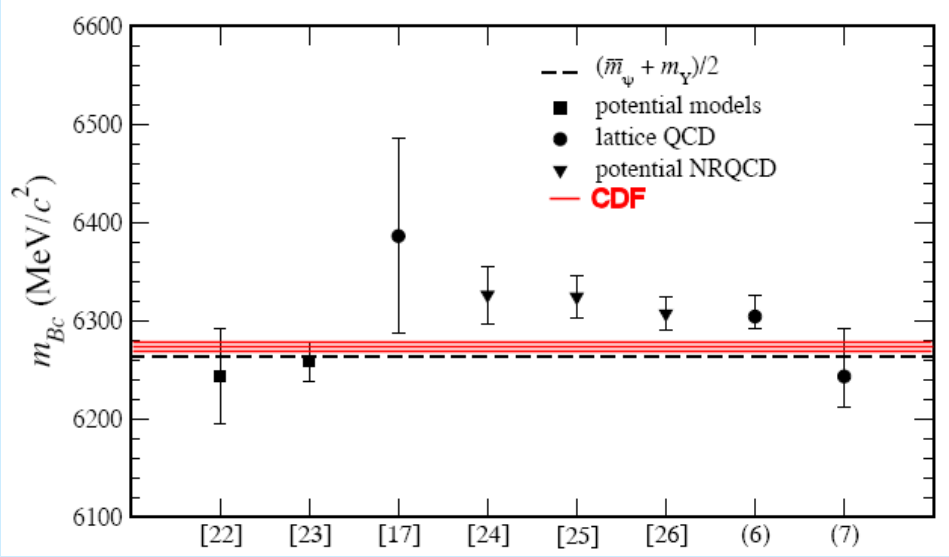
Mass(Bc) = 6274.1 +/- 3.2 +/- 2.6 MeV/c^2

Best in world!

Recent Lattice Calculations

- Lattice calculations that show good agreement with experiment were used to *predict* the mass of the Bc





$M(Bc)_{CDF}$ = 6274.1 +/- 3.2 +/- 2.6 MeV/c^2

$M(Bc)_{LAT}$ = 6304 +/- 12^{+18}_{-0} MeV/c^2