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## **J/psi + Upsilon associated production and prospects to observe a new heavy tetraquark state**

*Tuesday, November 19, 2019 12:00 PM (20 minutes)*

We consider a new mechanism for prompt simultaneous production of  $J/\psi$  and  $\Upsilon$  mesons in high energy hadronic collisions. The process is considered as a perturbative production of  $B_c^{(*)}$  mesons  $g+g \rightarrow B_c^{(*)} + \bar{B}_c^{(*)}$  followed by a long-distance final state interaction that rearranges the quarks to form  $J/\psi$  and  $\Upsilon$  mesons. Passing from  $B_c^{(*)} + \bar{B}_c^{(*)}$  configuration to  $J/\psi + \Upsilon$  configuration may proceed via a hypothetical resonance state, the tetraquark. The goal of this work is to examine whether the respective cross section is large enough to encourage a direct detection of the tetraquark at the LHC conditions (yes), and whether this hypothesis can help to explain the D0 data without assigning an unusually low value to  $\sigma_{\text{eff}}$  in the double parton scattering mechanism (no).

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