

Observation of structure in the J/ψ -pair mass spectrum

LHCb collaboration

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1. What is the significance of tetraquarks? Why do we care about these findings? (**Alexandra**)
2. Is there any guidance on why there should be particle/resonance at that energy? Are there any other experiments which suggest a tetraquark state that could lend some support to the claims of this paper? (**Ibrahim**)
3. Why do we expect tetraquarks to come from single-parton scattering (SPS) and not from double-parton scattering (DPS)? Why do we expect SPS muons to have higher transverse momentum? (**Mahesh**)
4. How are muons detected and identified? Is there a possibility of muon mis-identification? Why is the exact numerical selection, i.e., $p_T > 0.64$ GeV/ c ? (**Joey**)
5. The paper mentions that there is an assumption of a Breit-Wigner lineshape in their fits of the resonance. What is a Breit-Wigner lineshape? (**Justin W.**)
6. In general, what do we understand by the maximum likelihood fits and the $sPlot$ weighting method that the paper mentions to use in order to remove background? (**Joseph**)
7. The significance of the Null Hypothesis is only 3.4 sigma. In other words, the fit to the Null Hypothesis is almost consistent with the data. Is this good enough to claim discovery? (**Holly**)
8. Can the spectra be seen in online live data analysis? If so, when there is a peak you are interested in as a discovery of a particle, why can't more data be taken during the experiment rather than repeating the experiment some other time? (**Nisha**)