

Nuclear Lunch Seminar questions on Pentaquarks for Sept. 23 2015

1. What is an invariant mass? Why is it important? (**Douglas**)
2. What is a Dalitz plot? What are its uses? All Dalitz plots look similar in shape. How can we infer about the shape of a Dalitz plot? How are pentaquark states represented in the Dalitz plot of Figure 5? (**Nick**)
3. What information do we get from an Argand plot? Why is the Argand plot circular? (**Taya**)
4. What does it mean to say that a particular result has, say, 5σ significance? (**Abinash**)
5. What other possible channels can Λ^* decay into? (**Bishnu**)
6. Why do they use $J/\psi \rightarrow \mu^+ \mu^-$ as the trigger? (**Som**)
7. Why is it that the two pentaquark states have the opposite parities? (**Andrea**)
8. The $Z(4430)^+$ and the two P_c^+ pentaquark states are all charmonium states. Why do charmonium states have such distinct signatures compared to bottomonium, \dots , etc? (**Rekam**)
9. Could there be another way to explain the data other than with pentaquarks? (**Sudhanva**)
10. Why are systems with more quark contents than three not common? (**Linda**)
11. What is helicity formalism? (**Brian**)
12. For event reconstruction process, the paper mentions a need of simulation. What information goes into the simulation process? (**Nadyah**)
13. What is the gradient boosted decision tree (BDTG)? How does it separate signal from background? (**Tyler**)