



Contribution ID: 242

Type: **Parallel**

## Reanalysis of $uudc\bar{c}$ penta-quark states

Wednesday, August 21, 2019 11:30 AM (20 minutes)

The LHCb collaboration published new data on penta-quark states: three narrow states  $P_c(4312)$ ,  $P_c(4440)$ ,  $P_c(4457)$  are claimed. All of these states are higher than the threshold of  $NJ/\psi$  threshold and appeared as narrow resonances in the scattering channel  $N\text{-}J/\psi$ . We had analyzed these states in EPJC(2016)76:624 and PRD99(2019)014010. In this report we will reanalyze these states and the main points are: 1. The measured ones are resonances, it is better to do resonances scattering calculation rather than as bound states; 2. These states are narrow resonances due to coupling of  $\Sigma_{cD}$ ,  $\Sigma_{cD}$  quark cluster states to the  $N\text{-}J/\psi$  scattering states. Their spin-parity are  $1/2^-$ ,  $3/2^-$  and cannot be positive parity ones; 3. There should be other resonances in this energy region due to  $\Sigma_{cD}$ ,  $\Sigma_{cD}$  coupling; 4. In the  $N\text{-}\eta_c$  scattering channel one should be able to observe similar scattering resonances; 5. There might be  $J_p=1/2^-$   $N\text{-}\eta_c$  and  $3/2^-$   $N\text{-}J/\psi$  bound states around 3881-3884 and 3997-3998 MeV.

**Primary authors:** Prof. HUANG, Hongxia (Nanjing Normal University); Prof. PING, Jialun (Nanjing Normal University)

**Presenter:** Prof. HUANG, Hongxia (Nanjing Normal University)

**Session Classification:** Session 3: Exotic hadrons and candidates

**Track Classification:** Session 3: Exotic hadrons and candidates