Contribution ID: **174** Type: **Poster**

Event topology and multiplicity dependence of charmed hadron production in Proton+Proton Collisions at $\sqrt{s}$ = 13 TeV using pQCD inspired model

Wednesday, 6 April 2022 17:50 (4 minutes)

Heavy-flavor hadrons, containing charm and beauty flavors are believed to be vital probes for the understanding of Quantum Chromodynamics (QCD) in high-energy hadronic collisions: right from the study of production mechanisms in proton-proton (pp) collisions to the investigation of Cold Nuclear Matter (CNM) effects in proton-nucleus (p–A) collisions and their suppression in the search of Quark Gluon Plasma (QGP) in nucleus-nucleus (A–A) collisions. Recently, the observation of heavy-ion-like features in small systems (pp and p$-$A) like collective-like phenomena, strangeness enhancement etc, continues to generate considerable interest in the scientific community. In this regards, a cruial question arises, whether the QGP-like phenomena involve all the particles in the system or it is the effect of contributions from the processes like resonance decays, jets, underlying events (UE) etc. Therefore, small systems need to be re-investigated properly including the light and heavy-flavor sectors. In the present work, using transverse spherocity, one of the event-topology variables used to separate jetty and isotropic events from the pool of event samples, we aim to understand the production dynamics of heavy-flavors through the transverse momentum spectra, double differential yield and mean transverse momentum of J/ψ, D^0 and Λ_c^+ as a function of charged-particle multiplicity. For the current analysis, the events are generated by using 4C tuned PYTHIA8 for pp at $\sqrt{s}$ = 13 TeV, which is quite successful in explaining the heavy-flavor particle production at the LHC energies. We observe a clear dependence of spherocity on the production of J/ψ, D^0 and Λ_c^+.

Primary authors: DEB, Suman (Indian Institute of Technology Indore (IN)); Prof. SAHOO, Raghunath (Deparment of Physics, Indian Institute of Technology Indore, Simrol, Indore 453552, INDIA); Dr THAKUR, Dhananjaya (Institute of Modern Physics, Chinese Academy of Sciences, Lanzhou, China); Dr TRIPATHY, Sushanta (INFN - sezione di Bologna, via Irnerio 46, 40126 Bologna BO, Italy); Dr KHUNTIA, Arvind (The H. Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences, PL-31342 Krakow, Poland)

Presenter: DEB, Suman (Indian Institute of Technology Indore (IN))

Session Classification: Poster Session 1 T05_1

Track Classification: QGP in small and medium systems