



Contribution ID: 232

Type: Talk

Measurement of proton-deuteron correlations in pp collisions at $\sqrt{s} = 13$ TeV

Wednesday 8 September 2021 14:00 (20 minutes)

The first measurement of p(p)-d(d) two-particle correlations in high-multiplicity pp collisions at $\sqrt{s} = 13$ TeV will be presented. The studies of source sizes in these collision systems by the ALICE Collaboration enabled the possibility to study final-state interactions using two-particle momentum correlations. The measured correlation functions as well as comparisons with theoretical predictions using the Lednický-Lyuboshits model will be presented. The theoretical correlations include two interaction models using only the Coulomb force as well as both Coulomb and strong interaction. For the later the measured scattering lengths of proton-deuteron pairs from scattering experiments were taken. However both predictions cannot reproduce the measured correlation function. This deviation might give a hint for a different production mechanism of deuterons such as a late formation of these light nuclei in high-energy pp collisions.

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Session Classification: Hadrons in medium - hyperons and mesons in nuclear matter

Track Classification: Hadrons in medium - hyperons and mesons in nuclear matter