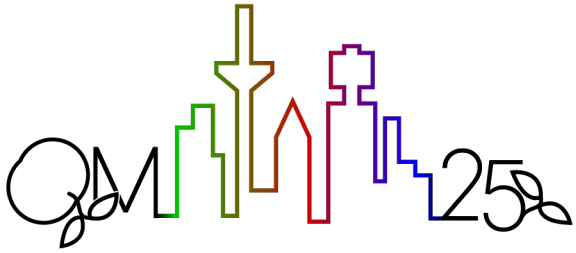

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Probing light (anti)nuclei formation via deuteron-proton angular correlations in pp collisions

The production of light (anti)nuclei is typically investigated by comparing experimental data with phenomenological models implementing statistical hadronization or coalescence approaches. In this context, the ALICE experiment has performed a broad set of precision measurements in different collision systems (pp, p-Pb and Pb-Pb) since the beginning of its operations. In this contribution, the production mechanisms of light (anti)nuclei are investigated exploring nuclei-proton azimuthal correlations. ALICE measures, for baryon–baryon and anti-baryon–anti-baryon pairs, a near-side anti-correlation structure, which is not reproduced by commonly used Monte Carlo models like PYTHIA or EPOS, indicating a fundamental flaw in the production mechanism of baryons in these models. The results presented in this contribution further test this paradigm by exploring deuteron-proton azimuthal correlations using Run 3 pp collisions and employing event generators such as PYTHIA, specifically tuned to model the production of light bound states through a coalescence afterburner.

Category

Experiment

Collaboration (if applicable)

ALICE

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