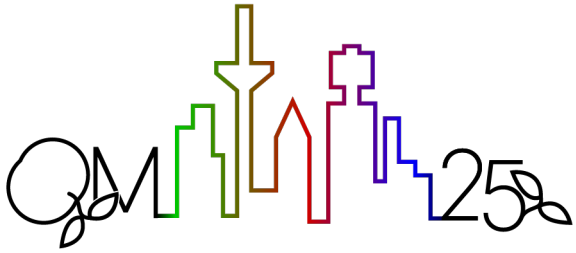

Contribution ID: **1118** Type: **Oral**

Production, flow, and properties of hypernuclei in heavy-ions with ALICE

Wednesday 9 April 2025 10:00 (20 minutes)

Hypernuclei are bound states of nucleons and hyperons. The measurement of the production of hypernuclei with mass number A=3 and 4 in heavy-ion collisions is a powerful tool to investigate the hypernucleosynthesis mechanism. In the coalescence model, the production yields are sensitive to the interplay between the spatial extension of the nucleus wavefunction and the baryon-emitting source size, whereas, in the statistical hadronization model, the nuclear structure does not come into play in the production. Hypernuclei span over a wide range of wavefunction radii, from about 2 fm for A=4 hypernuclei to about 10 fm for the hypertriton, making them ideal probes to test such models. In addition, the study of hypernuclei properties provides information on the nucleon-hyperon interactions, complementing the results obtained through femtoscopy correlation measurements. The strength of such interactions is a fundamental input to calculate the equation-of-state of the high-density nuclear matter found inside neutron stars.
This contribution presents recent measurements of ${}^{3}_{\Lambda}\mathrm{H}$, ${}^{4}_{\Lambda}\mathrm{H}$, and ${}^{4}_{\Lambda}\mathrm{He}$ based on the data samples collected by ALICE during the LHC Run 2 and Run 3. Besides the yield measurement, the production mechanisms can be investigated via anisotropic flow and global spin polarization measurements, comparing the behaviour of hypernuclei with their non-strange counterpart. In this contribution, we present recent flow measurements of ${}^{3}\mathrm{He}$, ${}^{3}_{\Lambda}\mathrm{H}$, and ${}^{4}\mathrm{He}$, obtained from the large Pb-Pb data sample collected by ALICE at the LHC in Run 3. Both the yields and the flow coefficients will be discussed in the context of the state-of-the-art theoretical models.

Category

Experiment

Collaboration (if applicable)

ALICE

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