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New insights into strange-quark hadronization measuring multiple (multi-)strange hadron production in small collision systems with ALICE

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Among the most important results from Run1 and Run2 at the LHC is the observation of enhanced production of (multi-)strange to non-strange hadron yields, gradually rising from low-multiplicity to high-multiplicity pp and p–Pb collisions, reaching values close to those measured in peripheral Pb–Pb collisions. More insightful information about the production mechanism could be provided by measuring the (multi-)strange particle multiplicity distribution, P(nS), using a novel method based on counting the number of strange particles event-by-event. This measurement extends the study of strangeness production beyond the average of the distribution and represents a unique opportunity to test the connection between charged and strange particle multiplicity production.
In this contribution, new ALICE results on K^0_S, Λ, Ξ and Ω multiplicity distributions in pp collisions at $\sqrt{s}$ = 5.02 TeV as a function of the charged particle multiplicity, together with the average probability for the production yield of more than one particle are presented. The results are compared to state-of-the-art phenomenological models implemented in commonly-used Monte Carlo event generators, drastically enhancing the sensitivity to the different processes implemented in each approach.

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