Intra-jet Strangeness Enhancement: A New Perspective on Strange Hadron Production in Small Systems

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The enhanced production of strange hadrons has long been considered a quintessential signature of Quark-Gluon Plasma (QGP) formation in heavy-ion collisions. However, recent ALICE experimental findings from smaller colliding systems reveal an enhancement of strangeness for high-multiplicity pp and p-Pb events when compared to lower-multiplicity pp collisions. The origin of this strangeness enhancement, which scales with the event multiplicity of the colliding system, are still unknown on the microscopic level. This talk will present ALICE results from p-Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 5.02$ TeV for Λ, $\mathrm{K}^0_{\mathrm{S}}$, and ϕ production inside and outside of jets using a novel azimuthal angular correlation technique, to investigate the enhancement with respect to the hard and soft scattering processes in the collision. Our results reveal that a fraction of the strangeness enhancement observed in small systems originates from jets and jet-medium interactions, which indicates a modification of the fragmentation function in medium. These experimental observations will be compared to predictions from established theoretical models.