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Recent results on two particle correlation measurements at LHC energy

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Recent results from collisions of small systems (e.g. pp, p-Pb) have revealed QGP-like signatures challenging our present understanding about the conditions required to form a Quark-Gluon Plasma (QGP) [1]. Notably, long-range azimuthal correlations, also known as the "ridge", suggest the presence of collective behavior —a hallmark of QGP —even when only a few nucleons are involved in the interaction [2]. Two-particle correlation measurements have played a pivotal role in revealing this collectivity [3].

In this presentation, we will focus on recent results from jet-like two-particle correlation measurements in collisions of small systems. By examining angular correlations between high-p_T particle pairs, we aim to probe the extent to which medium-induced modifications —such as suppression or broadening of the away-side peak—might occur. These are key signatures of jet quenching, a phenomenon widely observed in heavy-ion collisions and considered strong evidence for the presence of a dense, interacting QGP. The absence or presence of such effects in small systems remains an open question and related studies will be presented in this talk.

Reference:

1. Exploring QGP signature in small system: Insights from ALICE in p–Pb and pp collisions. https://doi.org/10.1051/epjconf/20243140
2. First observation of ultra-long-range azimuthal correlations in low multiplicity pp and p-Pb collisions at the LHC. https://doi.org/10.48550/arXiv.2504.02359
3. Ridges in p-A (and pp) collisions. https://doi.org/10.48550/arXiv.1901.00747

Author: HALDAR, Mintu (Bose Institute (IN))

Co-author: Dr PRASAD, Sidharth Kumar (Bose Institute)

Presenter: HALDAR, Mintu (Bose Institute (IN))

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