



## Exploring Collective Dynamics in Small Collision Systems with LHC-ALICE

Speaker: Debojit Sarkar (U of Copenhagen)

15:00 June 19, 2025, Thursday (UTC+8) Zoom meeting ID: 421173735 Passcode: 644179

## Ab stract:

The observation of coelective-like behaviors in pp and p–Pb collisions at LHC energies has sparked debte about the similarities between the dynamics of small systems and heavy-ion collisions. In this tark, we present our larest published results on long-range two-particle azimuthal correlations, utilizing the unique acceptance of the mil- and forward-rapidity detectors in ALICE. Leveraging the excellent particle identification equabilities of ALICE, we measure baryon and meson v2 as a function of multiplicity in pp and p–Po collisions. A clear baryon-meson v2 grouping (within 16) and a significant politing (e.f. so) at intermediate pT are observed in high-multiplicity p–Pb and pp collisions, similar to those seen in heavy-ion collisions. The Hydro-Coal-Targ modd, incorporating partorine flow and quark codescreec, best descrebes the dans, while atternative models fail to reprodue the patern. This finding provides strong evidence of a collectively flowing parbonic modium in high-multiplicity and p–Pb collisions.

We also investigate this key question of how far down in system size the dynamics of small systems and heavy-ion physics remain smithar. The observed baryon-meson v2 grouping and splitting, down to lower multiplicities, suggest that partonic collectivity may persist even in smaller systems. In addition, our latest results on ultra-long-range two-particle, correlations ( $\lambda$ (a)p=50(6.5)), excluding down to or below minimum-bins multiplicity in parton of p-Pb collisions, explore the limits of collective medium formation in small systems, providing unprecedented constraints on models aming the explain collective-like effects in small collision systems.

## Ab out the speaker:

Dr. Debojá Šarkar, carned his Ph.D. from VECC, India, in 2017, studying two-partick correlations at ALICE to cephree collectivity in small collision systems. Later on, he conducted postdoctoral research at Bose Institute, India, INFN Frascak, Italy, and Wayne State University, USA, focusing on A spin polarization at ALICE. Since 2022, he has been a postdoc at the Niek Bohr Institute, University Ocpenhagen, investigants collectivity in small system at ALICE. How Story 2024 and currently leads the Azimuthal Correlation Analysis Group, This July, he will join Indian Institute of Technology (IIT) Bombay as an Assistant Professor.



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