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HBT measurements with respect to event plane and jet axis in Pb-Pb 2.76 TeV collisions from ALICE

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The study of nucleus-nucleus collisions at ultra-relativistic energies aims to characterize the properties of hot and dense matter, the so called Quark-Gluon Plasma (QGP).

Jet quenching has been observed at RHIC and the LHC, and it has been extensively studied at both colliders.

Recently a new aspect of jet physics has been revealed at RHIC and the LHC.
The jet energy deposition in the medium (jet-quenching effect) was found to result in an increased production of low p_T particles at large angles opposite to the survived jet or triggered gamma direction.
However, there are still remaining open questions how the quenched jet energy is re-distributed in geometrical space, and how the QGP medium responds to it.

The HBT correlations using quantum interferometry of identical particles provide a unique tool to measure the source size at kinetic freeze-out.
In particular, azimuthally sensitive HBT with respect to the event plane(Ψ_2) offers the detailed analysis of freeze-out source shape.

In order to obtain more detailed information on the jet modification effect in geometrical space, the HBT technique can be extended and applied relative to jet axis.

In this poster, we present the first measurement of HBT radii with respect to the jet axis and second order event plane with ϕ_{jet}-Ψ_2 angle selection in Pb-Pb $\sqrt{s_{NN}}$ = 2.76 TeV collisions at the ALICE experiment.

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