

# 10th Edition of the Large Hadron Collider Physics Conference



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## Transverse sphericity dependence of global observables in heavy-ion collisions at the LHC using AMPT model

*Tuesday, May 17, 2022 7:00 PM (1 hour)*

Transverse sphericity is a tool that separates events based on geometrical shapes, i.e., jetty and isotropic events. Transverse sphericity based studies are widely understood in small systems like proton-proton (pp) collisions in simulations and experiments, but it is yet to be explored in heavy-ion collisions. In this work, we attempt to study different global observables in heavy-ion collisions such as squared speed of sound, Bjorken energy density and kinetic freeze-out properties for different centrality classes as a function of transverse sphericity. This study has been carried out using a multi-phase transport model (AMPT) in Pb-Pb collisions at  $\sqrt{s_{NN}} = 5.02$  TeV. Contrary to pp collisions where jetty events are dominated, heavy-ion collisions are found to be dominated by isotropic events. Squared speed of sound and Bjorken energy density are found to be insensitive to transverse sphericity. In contrast, kinetic freeze-out properties such as transverse radial flow velocity and kinetic-freezeout temperature are found to be susceptible to transverse sphericity.

Reference: S. Prasad, N. Mallick, D. Behera, R. Sahoo and S. Tripathy, *Sci. Rep.* 12, 3917 (2022).

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