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Anisotropic flows and the shear viscosity of the QGP within a transport approach with initial state fluctuations.

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We discuss the build up of elliptic flow and high order harmonics v_n within a transport approach at fixed shear viscosity to entropy density ratio and with initial state fluctuations. We show, exploring the T dependence of η/s , that a study of v_n in a wide p_T range allows to understand the difference behind the collective flows at LHC respect to RHIC. Furthermore we present novel results about the impact of η/s on the correlations between the initial space eccentricity ϵ_n and the final anisotropic flows v_n .

In particular we study the effect of a temperature dependent η/s at different beam energies from RHIC for $Au + Au$ at $\sqrt{s} = 62.4, 200$ GeV to LHC energies for $Pb + Pb$ at $\sqrt{s} = 2.76$ TeV. We find that for the different beam energies considered the suppression of the elliptic flow due to the viscosity of the medium has different contaminations coming from the hadronic or QGP phase depending on the average energy of the system.

References

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