

Measurement of Non-flow Correlations and Elliptic Flow Fluctuations in Au+Au Collisions at RHIC

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We present the first quantitative determination of the contribution of non-flow effects to the elliptic flow fluctuations in 200 GeV Au+Au collisions reported by PHOBOS [1]. In a hydrodynamical scenario, fluctuations in the shape of the initial collision region would naturally lead to corresponding fluctuations in the elliptic flow signal. Measurements of elliptic flow fluctuations can therefore shed light on the connection between observed flow, the initial geometry and the hydrodynamic evolution of the system. However, non-flow correlations can lead to a broadening of the observed event-by-event v_2 distribution and thereby modify the observed v_2 fluctuation signal.

We have developed a new analysis procedure to quantify the contribution of non-flow correlations to the v_2 signal. This analysis crucially relies on the large pseudorapidity coverage of the PHOBOS multiplicity array. The flow signal is disentangled from the non-flow contributions, quantified using δ defined in [2], by a systematic study of the v_2 magnitude extracted from two particle correlations at different rapidity gaps.

References

- [1] B. Alver *et al.* [PHOBOS Collaboration] submitted to *Phys. Rev. Lett.*, arXiv:nucl-ex/0702036
- [2] S.A. Voloshin, A.M. Poskanzer, A. Tang, G. Wang, submitted to *Phys. Lett. B*, arXiv:0708.0800