

## **Jets, mach cone, hot spots, ridges, harmonic flow, dihadron and $\gamma$ -hadron correlations in high-energy heavy-ion collisions**

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Within the AMPT Monte Carlo model, fluctuations in the initial transverse parton density are shown to lead to harmonic flows. The net back-to-back dihadron azimuthal correlation after subtraction of contributions from harmonic flows still has a double peak that is independent of the initial geometric triangularity and unique to the jet-induced Mach cone and expanding hot spots distorted by radial flow. The longitudinal structure of hot spots also leads to a near-side ridge in dihadron correlation with a large rapidity gap. By successively randomizing the azimuthal angle of the transverse momenta and positions of initial partons, one can isolate the effects of jet-induced medium excitation and expanding hot spots on the dihadron azimuthal correlation. The double peaks in the net dihadron and  $\gamma$ -hadron correlation are quantitatively different since the later is caused only by jet-induced Mach cone.

Reference:

[1] Guo-Liang Ma and Xin-Nian Wang, arXiv:1011.5249

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