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Perturbations on Top of the Fireball

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We study the effect that perturbations and their propagation through the medium have in the final particle distributions of heavy ion collisions. Our work is constrained to central collisions only, where the medium can be described by the solution to conformally invariant hydrodynamics developed by Gubser and Yarom, which is a generalization of Bjorken flow where the boost-invariant medium expands both in the longitudinal and the radial directions. When perturbations are added to the background the linearized hydrodynamic equations can be solved and the solutions for different modes can be summed up to form an initial point-like perturbation, that can be evolved until freeze-out. We use a similar procedure to study jets traversing the medium. Cases with different viscosities and different initial positions are considered and the Cooper-Frye prescription is used to calculate the final particle distributions.

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