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Probing the transverse size of initial inhomogeneities with flow observables

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Disentangling the effect of initial conditions and medium properties is an open question in the field of relativistic heavy-ion collisions. We argue that, while one can study the impact of initial inhomogeneities by varying their size, it is important to maintain the global properties fixed.

We present a method to do this by systematically smoothening the initial conditions, and apply it to four common initial condition models. We show that many observables are insensitive to the the hot spot sizes, including integrated v_n, scaled distributions of v_n, symmetric cumulants, event-plane correlations, and differential $v_n(p_T)$. We find however that the factorization breaking ratio r_n and sub-leading component in a Principal Component Analysis are more sensitive to the initial granularity and can be used to probe short-scale features of the initial density.

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