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Probing the Structure of the Initial State of Heavy-Ion Collisions with p_T-Dependent Flow Fluctuations[1] MAURICIO HIPPERT, JOAO GABRIEL BARBON, DAVID DOBRIGKEIT CHINELLATO, Universidade Estadual de Campinas, MATTHEW LUZUM, Universidade de Sao Paulo, JORGE NORONHA, Department of Physics, University of Illinois at Urbana-Champaign, TIAGO NUNES DA SILVA, Universidade Federal de Santa Catarina, WILLIAN SERENONE, JUN TAKAHASHI, Universidade Estadual de Campinas — The connection between initial-state geometry and anisotropic flow can be quantified through a well-established mapping between p_T-integrated flow harmonics and cumulants of the initial transverse energy distribution. In this paper we successfully extend this mapping to also include p_T-differential flow. In doing so, we find that subleading principal components of anisotropic flow can reveal previously unobserved details of the hydrodynamic response, in both the linear and the nonlinear regimes. Most importantly, we show that they provide novel information on the small-scale structures present in the initial stage of relativistic heavy-ion collisions.

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