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Event-by-event correlation between medium flow and jet flow

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It is well-known that a nonzero initial spatial eccentricity in a heavy-ion collision is reflected in the final anisotropic flow of the bulk medium. Jets traversing a spatially anisotropic medium also develop momentum anisotropy (at fixed p_T) through path length dependence of energy loss. For smooth initial conditions, bulk and jet flow anisotropy coefficients are naturally related. However, more realistic initial condition models include large fluctuations in the initial transverse profile of the medium with “hot spots” that induce a nontrivial bulk and jet response in momentum space. We present results on the correlation between the bulk and jet flow anisotropy pattern in A+A at RHIC and LHC, from a calculation that combines covariant transport theory for the bulk medium evolution with jet energy loss for high- p_T light and heavy-flavor production.

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