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Initial Conditions of Conserved Charges in Heavy-Ion Collisions¹ MATTHEW SIEVERT, University of Illinois at Urbana-Champaign, MAURICIO MARTINEZ, North Carolina State University, DOUGLASS WERTEPNY, Ben Gurion University of the Negev, JACQUELYN NORONHA-HOSTLER, University of Illinois at Urbana-Champaign — One of the major goals of the heavy-ion program in nuclear physics is to experimentally determine the transport properties of the quark-gluon plasma (QGP), a novel state of hot and dense nuclear matter. While properties such as the shear and bulk viscosities of the QGP have been extensively studied at top collider energies, the dynamics of charge transport have largely been relegated to lower energies where net baryon stopping becomes important. In this work, we outline a new approach to studying charge transport in the QGP which can be applied even at the LHC. We present a new Monte Carlo event generator called ICCING which constructs the initial state of a heavy ion collision, including the pockets of positive and negative charge produced by quark pair production (even though the total charge is zero). These initial conditions of the conserved charges can then be evolved in hydrodynamics or other transport models to study the role of charge in particle correlations. We also propose sets of charge-conjugation-odd observables that should be most sensitive to the initial-state fluctuations of the conserved charges.

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