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An Analytic Study of the Initial Energy Momentum Tensor in Nuclear Collisions

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We present an analytic calculation of the initial classical gluon field in high energy collisions of nuclei. Our results are explicit expressions for the components of the event-averaged energy momentum tensor which are valid up yo times $\tau \sim 1/Q_s$. In particular we will discuss the early time evolution of the energy density and longitudinal and transverse pressure, and compare to available numerical results. We then demonstrate how both a rapidity-odd and rapidity-even energy flow emerge naturally from the QCD analogues of Faraday's and Gauss' Law. We discuss their phenomenological consequences in terms of initial elliptic flow, global angular momentum and directed flow. We will also briefly mention how an event generator can be built based on these results.

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