Anisotropic Jet Quenching in semi-Quark-Gluon Plasmas with Magnetic Monopoles JIECHEN XU, Columbia University, JINFENG LIAO, Indiana University, MIKLOS GYULASSY, Columbia University — We present a new jet quenching framework, CUJET3.0, that is shown to simultaneously account for both the high \( p_T \) single inclusive hadron suppression \( R_{AA} \) and its azimuthal anisotropy \( v_2 \) in heavy ion collisions at both RHIC and LHC energies. CUJET3.0 generalizes our previous pQCD/HTL based CUJET2.0 model that couples running coupling DGLV jet energy loss to (2+1)D viscous hydrodynamic fluids, and it includes two new nonperturbative effects in the QCD transition temperature range \( T \sim 140 - 250 \) MeV: (1) the Polyakov loop suppression of color-electric scattering (aka “semi-QGP” of Pisarski et al) and (2) the enhancement of scattering due to emergent magnetic monopoles near \( T_c \) (aka “magnetic scenario” of Liao and Shuryak). The parameters of the model are constrained by lattice QCD data. We find that the CUJET3.0 jet transport coefficient \( \hat{q}(E,T)/T^3 \) peaks near \( T_c \) by a factor \( \sim 4 \) above previous perturbative pQCD/HTL estimates, approaching hybrid AdS/SYM holography of Liu et al, but it has very strong nonconformal \( E \) and \( T \) dependence up to \( T \sim 400 \) MeV. Extrapolating down to \( E = 2 \) GeV, we find a striking new connection between bulk perfect fluidity with \( \eta/s \sim 0.1 \) near \( T_c \) and high \( p_T \) high \( T \) perturbative jet quenching.

Jiechen Xu
Columbia University

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