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Mixed confinement-deconfinement phase in vortical gluon plasma

Using first-principle numerical simulations, we find a new spatially inhomogeneous phase in rigidly rotating $N_c = 3$ gluon plasma. This mixed phase simultaneously possesses both confining and deconfining phases in thermal equilibrium. Unexpectedly, the local critical temperature of the phase transition at the rotation axis does not depend on the angular frequency within a few percent accuracy. An analytic continuation of our results to the domain of real angular frequencies indicates a profound breaking of the Tolman-Ehrenfest law in the vicinity of the phase transition, with the confining (deconfining) phase appearing far (near) the rotation axis.

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Session Classification: Poster session with snacks and coffee