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Probing holographic model of a rotating $\mathcal{N} = 4$ SYM quark-gluon plasma

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In this talk I'll discuss a holographic probes of a rotating $\mathcal{N} = 4$ SYM quark-gluon plasma. Following the holographic duality a 4d rotating strongly-coupled QGP can be described by a rotating Kerr-AdS_5 black hole. The Kerr-AdS_5 black hole has a conformal boundary $R \times S^3$, on which the $N = 4$ SYM theory (a thermal ensemble) "lives". Moreover, the Hawking temperature corresponds to the temperature of the dual theory. We study rectangular Wilson loops in $N = 4$ SYM on $R \times S^3$ at finite temperature using the holographic dictionary. According to this we consider an open string in Kerr-AdS_5 hanging down from the conformal boundary to the horizon, so the string endpoints correspond to quarks. We calculate the quark-antiquark potential from the Nambu-Goto action of the string. We show that the potential includes the Coulomb and linear parts, which indicates about a confinement/deconfinement phase transition. We also calculate the jet-quenching parameter of a fast patron in the rotating $\mathcal{N} = 4$ SYM QGP and analyze its dependence on the rotation. We show that the value of the jet-quenching parameter for the rotating case can be smaller comparing to the case of the planar AdS black hole.

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