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Quantum Corrections to Holographic Strange Metal at Low Temperature

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The holographic approach to the strange metal phase relies on extremal AdS4 black holes with important input from their AdS2 throat geometry. Motivated by the current understanding of the role of quantum fluctuations in the throat of the black hole. We model quantum gravity and gauge fluctuations in the throat region by adopting results in JT gravity, effectively leading to quantum corrections for the dual CFT1 Green's function. We use the quantum-corrected Green's function to compute the conductivity for (2+1)-d strange metal and obtain corrections for the DC resistivity and the optical conductivity. The quantum corrections for DC resistivity require higher precision than the current experimental accuracy to be detected in the future. The quantum corrections for optical conductivity provide a plausible explanation for the experimental anomalous power-law behavior detected in various strange metals. We will discuss these aspects in this talk.

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