

Abstract Submitted
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Holographic metals and fractionalized Fermi liquids¹ SUBIR SACHDEV, Harvard University — I show that there is a close correspondence between the physical properties of holographic metals near charged black holes in anti-de Sitter (AdS) space, and the fractionalized Fermi liquid phase of the lattice Anderson model. The latter phase has a “small” Fermi surface of conduction electrons, along with a spin liquid of local moments. This correspondence implies that certain mean-field gapless spin liquids are states of matter at non-zero density which realize the near-horizon, $\text{AdS}_2 \times \mathbb{R}^2$ physics of Reissner-Nordstrom black holes. I will also go beyond this mean-field theory, and discuss connections between gauge theories of fractionalized Fermi liquids and holographic theories.

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