

Abstract Submitted  
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**Gaps, Pseudogaps, and the Nature of Charge in Holographic Fermion Models** GARRETT VANACORE, PHILIP PHILLIPS, University of Illinois at Urbana-Champaign — Building on prior holographic constructions of Fermi arcs and Mott physics, we investigate the landscape of gapped and gapless strongly-correlated phases resulting from bulk fermion interactions in gauge/gravity duality. We test a proposed connection between bulk chiral symmetry and gapless boundary states, and discuss implications for discrete symmetry breaking in pseudogapped systems like the cuprate superconductors. Numerical methods are used to treat gravitational backreaction of bulk fermions, allowing more rigorous investigation of the existence of holographic Fermi surfaces and their adherence to Luttinger's rule. We use these techniques to study deviations from Luttinger's rule in holography, testing a recent claim that momentum-deconfined charges are at the heart of the Mott state.

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