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**Charge 2e Boson Underlies Two - Fluid Model of the Pseudogap in Cuprate Superconductors** SHILADITYA CHAKRABORTY, PHILIP PHILLIPS, University of Illinois at Urbana-Champaign — Starting from the effective low energy theory of a doped Mott insulator, we show that the effective carrier density in the underdoped regime agrees with a two - fluid description. Namely, it has distinct temperature independent and thermally activated components. We identify the thermally activated component as the bound state of a hole and a charge 2e boson, which occurs naturally in the effective theory. The thermally activated unbinding of this state leads to the strange metal and subsequent T-linear resistivity. We find that the doping dependence of the binding energy is in excellent agreement with the experimentally determined pseudogap energy scale in cuprate superconductors.

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