Universal transport near a continuous Mott transition in two dimensions WILLIAM WITCZAK-KREMPA, University of Toronto, POUYAN GHAEMI, University of Illinois at Urbana-Champaign , TODADRI SENTHIL, MIT, YONG BAEK KIM, University of Toronto — We discuss the universal transport signatures near a zero-temperature continuous Mott transition between a Fermi liquid and a spin liquid in 2 spatial dimensions. This transition can be described using a slave-rotor field theory, where the electron is decomposed into a fermionic spinon and charge-carrying rotor, both interacting with an emergent U(1) gauge field. The universal part of the non-zero temperature charge transport is determined by the dynamics of the charged rotors and is affected by the gauge fluctuations. Explicit predictions for the behavior of the electrical conductivity are made via the solution of a quantum kinetic equation using controlled approximations.

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