Anomalous Dimension of the Electrical Current in the Normal State of the Cuprates from the Fractional Aharonov-Bohm Effect\textsuperscript{1} KRIDSANAPHONG LIMTRAGOOL, PHILIP PHILLIPS, Univ of Illinois - Urbana —

We show here that if the current in the normal state of the cuprates has an anomalous dimension, then the Aharonov-Bohm flux through a ring does not have the standard $eBA/h$ form, where $A$ is the area, $B$ is the external magnetic field, and $e$ is the electric charge, but instead it is modified by a geometrical factor that depends directly on the anomalous dimension of the current. We calculate the Aharonov-Bohm flux in square and disk geometries. In both cases, the deviation from the standard result is striking and offers a fingerprint about what precisely is strange about the strange metal.

\textsuperscript{1}We thank NSF DMR-1461952 for partial funding of this project. KL is supported by a scholarship from the Ministry of Science and Technology, Royal Thai Government. PP thanks the Guggenheim Foundation for a 20152016 Fellowship.