Quantum Critical Scaling of Graphene\textsuperscript{1} DANIEL E. SHEEHY, Louisiana State University, JOERG SCHMALIAN, Ames Lab and Iowa State University — We show that the emergent relativistic symmetry of electrons in graphene near its quantum critical point (QCP) implies a crucial importance of the Coulomb interaction. We derive scaling laws, valid near the QCP, that dictate the nontrivial magnetic and charge response of interacting graphene. Our analysis yields numerous predictions for how the Coulomb interaction will be manifested in experimental observables such as the diamagnetic response and electronic compressibility.

\textsuperscript{1}This research was supported by the Ames Laboratory, operated for the U.S. Department of Energy by Iowa State University under Contract No. DE-AC02-07CH11358.