

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Disorder Driven Quantum Criticality in Three Dimensional Dirac Semi-Metals JEDEDIAH PIXLEY, PALLAB GOSWAMI, Condensed Matter Theory Center, University of Maryland, College Park — We study the nature of the quantum phase transition between a three dimensional Dirac semi-metal and a disorder controlled diffusive metal. We analyze a lattice model using numerical and field theoretical methods to explore the phase diagram and quantum critical behavior. We determine the scaling properties of the density of states and various thermodynamic observables for sufficiently large system sizes and extract the relevant critical exponents. As a result, we show the scaling functions obey energy over temperature scaling and the quantum critical point is an interacting fixed point.

Jedediah Pixley
Condensed Matter Theory Center, University of Maryland, College Park

Date submitted: 13 Nov 2014

Electronic form version 1.4