

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Non-Fermi liquids in three dimensions** SUBHRO BHATTACHARJEE<sup>1</sup>, Department of Physics and Centre for Quantum Materials, University of Toronto, Toronto, Canada, SUNG-SIK LEE<sup>2</sup>, Department of Physics and Astronomy, McMaster University, Hamilton, Canada, YONG BAEK KIM<sup>3</sup>, Department of Physics and Centre for Quantum Materials, University of Toronto, Toronto, Canada — The shape of the fermi surface may have important effects in determining the relevance (in Renormalization group sense) of interactions for the underlying fermions. In our work, we show that for certain physically realizable fermi surfaces in three dimensions, the coupling of the fermions to critical bosons is relevant at the Gaussian fixed point. We find that such interactions may lead to a three dimensional non-Fermi liquid state. We calculate one-loop corrections to the electron self energy within a scheme of  $(3-\epsilon)$  perturbation in the spatial dimensions to understand the features of such a non-Fermi liquid state.

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Date submitted: 25 Nov 2012

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