

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Microscopic theory of superconductivity near a Lifshitz transition¹ VIVEK MISHRA, THOMAS MAIER, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN-37831, USA., DOUG SCALAPINO, Department of Physics, University of California, Santa Barbara, CA-93106, USA. — Observation of robust superconductivity in some of the iron based superconductors in the vicinity of a Lifshitz point has attracted many theoretical and experimental studies. The majority of these studies have been phenomenological. Here we discuss a microscopic treatment of the pairing mechanism for a bilayer Hubbard model, which goes through a Lifshitz transition. We study pairing driven by spin-fluctuations by solving the strong coupling Eliashberg equations and make a systematic comparison of the results with non-perturbative dynamical cluster quantum Monte Carlo calculations. Our findings are quite general and we will discuss their application to some of the iron based superconductors.

¹Research sponsored by the Laboratory Directed Research and Development Program of Oak Ridge National Laboratory, managed by UT-Battelle, LLC, for the U. S. Department of Energy.

Vivek Mishra
Center for Nanophase Materials Sciences, Oak Ridge National Laboratory, Oak Ridge, TN-37831, USA.

Date submitted: 02 Nov 2015

Electronic form version 1.4