Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Three-particle interactions in effective one-band models for unconventional superconductivity STEFAN MAIER, CARSTEN HONERKAMP, RWTH Aachen — We discuss different approximations for effective low-energy interactions in multiband models for weakly interacting correlated electrons. In the study of Fermi surface instabilities of the conduction band(s), the standard approximation consists in keeping just those terms in the bare interactions that couple only to the conduction band(s), while corrections due to virtual excitations into bands away from the Fermi surface are typically neglected. In order to include important aspects of these virtual interband excitations, we present an improved truncation of the functional renormalization group (fRG) that keeps track of the three-particle vertex in the conduction band. Within a simplified two-patch treatment of a two-band model, we demonstrate that these corrections can have a rather strong effect in parts of the phase diagram by changing the critical scale for d-wave pairing close to a phase boundary. The improved truncation scheme is applied as well to the Emery model within a multi-patch channel-decomposed fRG.

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Date submitted: 10 Nov 2011 Electronic form version 1.4