

Abstract Submitted
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Cluster-based many-body calculations of flux quantization and superfluid density JOHN DEISZ, NOAH MEISNER, California Lutheran University — The energy and free energy of a superconductor is periodic as a function of threaded magnetic flux when the superconductor is constructed with an annular geometry. The curvature of the energy curves with respect to the minima is related to the superfluid density of the superconductor. We present calculations for the energy curves and superfluid density that are based on self-consistent many-body perturbation theory applied to both single- and multi-band Hubbard models. We demonstrate how to adapt our scheme when a cluster approximation is used to limit the computational cost of obtaining the electron self-energy.

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