

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

A Generalized Slave-Particle Method¹ ALEXANDRU BOGDAN GEORGESCU, Department of Physics and Center for Research on Interface Structures and Phenomena, Yale University, SOHRAB ISMAIL-BEIGI, Department of Physics, Department of Applied Physics and Center for Research on Interface Structures and Phenomena, Yale University — Two slave-particle methods, namely the slave-rotor and the slave-spin approaches, have been of recent interest in the computational correlated electron community. Both methods solve Hubbard-type models and go beyond the single-particle approximations by describing aspects of correlated electron behavior in a computationally efficient manner. We present a generalized slave-particle formalism that connects the the two while reproducing the results of each method in the appropriate limit. The framework automatically corrects the problematic small U behavior of the slave-rotor approach while reproducing its behavior in situations where it has been found physically relevant (e.g., for nickelate heterostructures).

¹This work is supported by the National Science Foundation through grant MRSEC NSF DMR-1119826

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Date submitted: 13 Nov 2014

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