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Decoupling methods for the solution of the dynamical mean field theory impurity problem HARALD JESCHKE, Institut für Theoretische Physik, Universität Frankfurt, Robert-Mayer-Str. 8-10, 60054 Frankfurt, Germany, GABRIEL KOTLIAR, Department of Physics and Astronomy, Rutgers University, 136 Frelinghuysen Road, Piscataway, NJ 08854-8019, USA — The use of equation of motion decoupling methods as impurity solvers to be used in conjunction with the dynamical mean field self-consistency condition for the solution of lattice models is explored. By comparing the impurity solver to exact diagonalization results and applying it to lattice models like Hubbard model and Periodic Anderson model it is shown that the method could be a cheap alternative to computationally demanding methods like quantum Monte Carlo. The method works in a large range of parameters and promises to be useful in combination with density functional theory for the study of strongly correlated materials.

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