

## Recent Progress in Ab Initio Treatment of Correlations in Solids

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The treatment of strongly correlated materials starting from first principles is a long standing problem in electronic structure theory. In this talk I will review several recent developments. First, we will introduce the self consistent linearized quasiparticle GW method, LQSGW, and its combination with Dynamical Mean Field Theory (DMFT) [1]. Then we will introduce the Rotational Invariant Slave Boson method (RISB) which is related to the Gutzwiller approximation, and its combination with DMFT [2]. An application comparing these methods to an unusual thermoelectric material FeSb<sub>2</sub>, will be highlighted. We will conclude with an outlook and some general directions.

[1]Choi et. al. Npj Npj Quantum Materials 1, 16001

[2]Lanata et. al. Physical Review Letters 118 (12), 126401