From LDA+U to realistic correlated calculations

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We discuss a prospect of realistic electronic structure calculations
with constrained screened Coulomb and Exchange interactions.
Dynamical mean field theory in combination with the first-principle DFT-scheme
is an optimal starting point to go beyond static
density functional approximation and include effects of spin and
charge fluctuations in strongly correlated materials.
In order to go beyond the local approximation we used a dual-fermion/boson framework
and shows that one can incorporate realistic Coulomb and Exchange interactions
in electronic structure of correlated materials.