

Ensemble DFT for electronic excitations
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I will review the basic theory of EDFT and its long history. I will compare it with other DFT approaches, including time-dependent DFT, thermal DFT, and Delta SCF. I will report on our latest results, which include proofs of some exact conditions for EDFT and some illustrations and results for the Hubbard dimer.

- **Exact and approximate Kohn-Sham potentials in ensemble density-functional theory** Yang, Zeng-hui, Trail, John R., Pribram-Jones, Aurora, Burke, Kieron, Needs, Richard J. and Ullrich, Carsten A., *Phys. Rev. A* **90**, 042501 (2014).
- **Excitations and benchmark ensemble density functional theory for two electrons** Pribram-Jones, Aurora, Yang, Zeng-hui, Trail, John R., Burke, Kieron, Needs, Richard J. and Ullrich, Carsten A., *The Journal of Chemical Physics* **140**, (2014).
- **Direct Extraction of Excitation Energies from Ensemble Density-Functional Theory** Yang, Zeng-hui, Pribram-Jones, Aurora, Burke, Kieron and Ullrich, Carsten A., *Phys. Rev. Lett.* **119**, 033003 (2017).
- **Accurate double excitations from ensemble density functional calculations** Francisca Sagredo and Kieron Burke, *The Journal of Chemical Physics* **149**, 134103 (2018)
- **Exact Conditions for Ensemble Density Functional Theory** Thais R. Scott, John Kozlowski, Steven Crisostomo, Aurora Pribram-Jones and Kieron Burke, to appear in PRB (2024)