

## Linear scaling multireference coupled cluster methods

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The coupled cluster ansatz can be used combined with the multireference perturbation theory to develop rigorously size-extensive multireference methods. Similarly to single-reference coupled-cluster based methods the polynomial scaling in computational time and memory can be reduced using local correlation approaches.[1] In my talk I will present progress on implementation of linear scaling multireference coupled cluster methods. The methods are implemented using local integrated tensor framework [2] which allows fast implementation of linear scaling methods. An extension to computation of excitation energies in a Hermitian linear response formalism [3,4] will be discussed.

1. F. Menezes, D. Kats and H. J. Werner, *J. Chem. Phys.*, **145**, 124115 (2016)
2. D. Kats and F. R. Manby, *J. Chem. Phys.*, **138**, 144101 (2013)
3. D. Kats, D. Usvyat and M. Schütz, *Phys. Rev. A*, **83**, 062503 (2011)
4. G. Wälz, D. Kats, D. Usvyat, T. Korona and M. Schütz, *Phys. Rev. A*, **86**, 052519 (2012)