

# Semistochastic Quantum Monte Carlo – A hybrid of of Exact Diagonalization and QMC methods

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This talk will provide a pedagogic and unified overview of various zero-temperature QMC methods, discuss their advantages and disadvantages, and the nature of the infamous “Sign Problem”. Then the recently developed Semistochastic Quantum Monte Carlo method [1], which combines some of the advantages of Exact Diagonalization with those of the FCIQMC [2, 3] method will be discussed.

## References

- [1] F. R. Petruzielo, A. A. Holmes, Hitesh J. Changlani, M. P. Nightingale and C. J. Umrigar, *Phys. Rev. Lett.*, **109**, 230201, (2012).
- [2] George H Booth, Alex Thom and Ali Alavi, *J. Chem. Phys.*, **131**, 054106 (2009).
- [3] Deidre Cleland, George H Booth, and Ali Alavi, *J. Chem. Phys.*, **132**, 041103 (2010).