

Abstract for an Invited Paper
for the DNP08 Meeting of
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Ab initio nuclear structure - advances and challenges¹

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I will present an overview of recent advances in ab-initio methods used in p-shell nuclei and beyond. The main focus will be on Greens Function Monte Carlo (GFMC), Coupled Cluster (CC) and the No-Core Shell Model (NCSM). I will introduce Chiral Effective Field Theory (EFT) Hamiltonians that provide a bridge between QCD and non-relativistic nucleon-nucleon and multi-nucleon interactions. Leadership-class supercomputers play a key role in achieving these results and I will show some measures of performance. Major physics accomplishments and new challenges will round out the overview.

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