

# “Load Balancing at Extreme Scale” – Ewing Lusk, Argonne National Laboratory

## ASCR- SciDAC UNEDF Computer Science Highlight

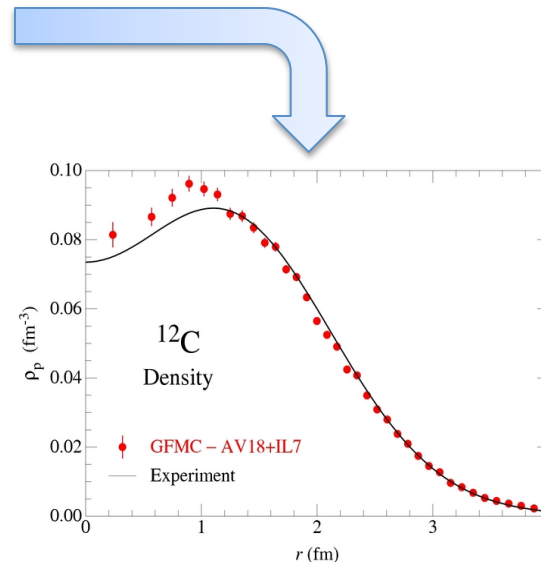
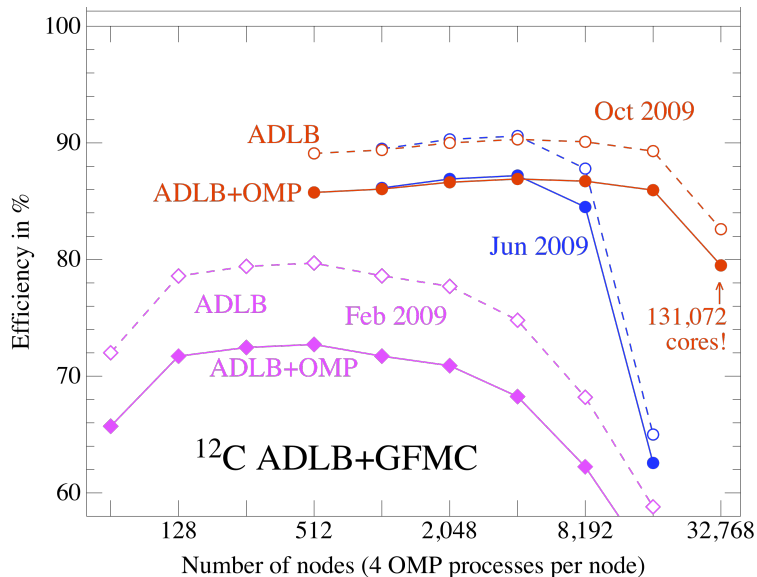
### Objectives

- Enable Green’s Function Monte Carlo calculations for  $^{12}\text{C}$  on full BG/P as part of UNEDF project
- Simplify programming model
- Scale to leadership class machines

### Impact

- Demonstrate capabilities of simple programming models at petascale and beyond
- Show path forward with hybrid programming models in library implementation

Improved Efficiency (compute time/wall time) with more nodes



### Progress

- Initially, balanced utilization CPU cycles
- Next, balanced use of memory
- Finally, ADLB acquired the capability to balance message flow
- “More Scalability, Less Pain” by E. Lusk, S.C. Pieper and R. Butler published in SciDAC Review 17, 30 (2010)



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