

Exascale Mathematics Home

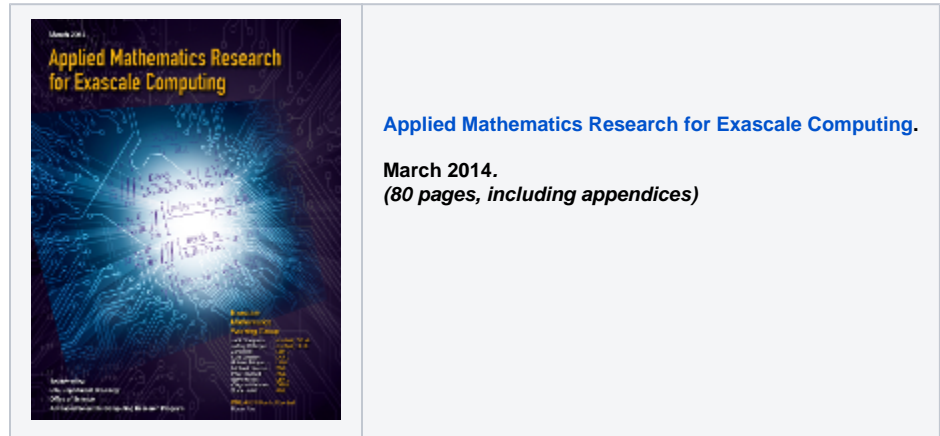
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The Department of Energy (DOE) Office of Science Program on Advanced Scientific Computing Research has formed an Exascale Mathematics Working Group (EMWG) for the purpose of identifying mathematics and algorithms research opportunities that will enable scientific applications to harness the potential of exascale computing.

The EMWG's charter is to:

- Analyze potential gaps in current thinking about applied mathematics for the exascale;
- Identify new algorithmic approaches that address exascale challenges;
- Identify mathematics to address new scientific questions accessible at exascale, especially through integration across applied mathematics sub-disciplines;
- Identify a holistic, co-design approach for applied mathematics exascale research that more directly involves a dialogue with application scientists and computer scientists; and
- Submit a report of the findings to the DOE Office of Science.

EMWG 2014 report:



[Applied Mathematics Research for Exascale Computing.](#)

March 2014.

(80 pages, including appendices)

SIAM 2014 Annual Meeting Presentations (July 2014):

[Evolutionary or Revolutionary? Applied Mathematics for Exascale Computing](#), Jeff Hittinger

[Hierarchical Multilevel Methods for Exascale Uncertainty Quantification and Optimization](#), Clayton Webster and Stefan Wild

[Mathematical Modeling and Discretization for Exascale Simulation](#), Luis Chacon

[Discrete Solvers at the Exascale](#), Esmond Ng

[Resilient Algorithms and Computing Models](#), Franck Cappello