
Hormozd Gahvari
**Addressing Challenges to Scalability in Parallel Algebraic
Multigrid**

4305 Siebel Center
201 N Goodwin Avenue
Urbana
IL 61801

`gahvari@illinois.edu`

Allison H. Baker

Martin Schulz

Ulrike Meier Yang

Kirk Jordan

William Gropp

Luke Olson

With single-core performance no longer increasing, future performance gains in computers will need to come from increased parallelism. The same applies for applications, including algebraic multigrid solvers. As a result, scalability on larger parallel machines is critical. In this talk, we review the current state of parallel algebraic multigrid and present performance models to highlight the challenges it is currently facing, which center around an increasing communication burden and an increasing number of idle processors on coarse grids. We then discuss how these problems might be overcome by utilizing redundant data distribution across otherwise inactive processors and through the use of additive multigrid.