

Performance of smoothers for algebraic multigrid preconditioners for finite element  
variational multiscale incompressible magnetohydrodynamics

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We examine the performance of various smoothers for a fully-coupled algebraic multigrid preconditioned Newton-Krylov solution approach for a finite element variational multiscale turbulence model for incompressible magnetohydrodynamics (MHD). Our focus will be on large-scale, high fidelity transient MHD simulations on unstructured meshes. We present scaling results for resistive MHD test cases, including results for over 500,000 cores on an IBM Blue Gene/Q platform.