
Tom Manteuffel
Root-node smoothed aggregation for anisotropic diffusion

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Linear systems arising from discretization of anisotropic diffusion are difficult to solve numerically, particularly on unstructured meshes or if the angle of anisotropy is not aligned with the mesh. In this talk, I will discuss why this is difficult for multigrid-type solvers and look at the limitations of state-of-the-art, root-node, smoothed-aggregation routines. I then introduce a new perspective on the construction of prolongation operators in root-node smoothed aggregation, which addresses these limitations. Initial theoretical and numerical results will be presented that demonstrate potential for a robust and scalable method.