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**Improving Interpolation for Aggressive Coarsening**

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Aggressive coarsening has been a very effective tool to reduce computational complexities as well as memory requirements in algebraic multigrid, however it requires an interpolation operator that deals effectively with the long distances between coarse grid points. Usually aggressive coarsening is combined with multipass interpolation, an interpolation based on direct interpolation, which leads to deteriorating convergence and decreased numerical scalability.

Various new long range interpolation operators based on distance-two interpolation operators, which have a higher of accuracy than direct interpolation, are investigated. This presentation describes the resulting algorithms, their convergence behavior, and analyzes their performance on parallel computers.

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