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Systematically Reducing Data Movement in Algebraic Multigrid

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Computers today are becoming more and more massively parallel. Applications, including algebraic multigrid (AMG), will have to adapt to this future. While AMG is well-suited to solving large problems on massively parallel machines due to its ideal computational complexity, it faces challenges from having to move a substantial amount of data. In this talk, we discuss our work to systematically reduce data movement in AMG. Aided by a performance model, we gather data into locations where data movement becomes only local, resulting in improved performance and scalability.