Half-Sweep Algebraic Multigrid (HSAMG) Method Applied to Diffusion Equations

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Abstract: In previous studies, the efficiency of the Half-Sweep Multigrid method has been shown to be very fast as compared with the standard Multigrid method. This is due to its ability to reduce computational complexity of the standard method. In this paper, the primary goal is to purpose the Half-Sweep Algebraic Multigrid (HSAMG) method using the HSCN finite difference scheme for solving one-dimensional diffusion equations. The formulation of the HSAMG scheme is derived by borrowing the concept of the Half-Sweep Multigrid method. Results on some numerical experiments conducted show that the HSAMG method is superior to the standard algebraic method.

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