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**A sharp bound on the convergence rate of an
aggregation-based algebraic multi-grid method applied to
a 1D model problem**

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We consider the linear system $Ax = b$ arising from one-dimensional Poisson's equation with Dirichlet boundary conditions, where A is the square matrix having the stencil form $\begin{bmatrix} -1 & 2 & -1 \end{bmatrix}$. Here we show, using some properties of centrosymmetric matrices, that a pairwise aggregation-based algebraic 2-grid method reduces the A -norm of the error at each step by at least the factor $1/\sqrt{2}$.