

AMG (Brandt, McCormick and Ruge, 1984)

Algebraic MultiGrid methods **do not explicitly use the problem geometry but rely only on matrix entries** to generate coarse-grids by using characterizations of *algebraic smoothness*

Key issue in effective AMG for general matrices

error not reduced by the (chosen) smoother are called
algebraic smoothness:

$$(Aw)_i = r_i \approx 0 \implies w_{i+1} \approx w_i$$