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The standard multigrid procedure performs poorly or may break down when used to solve certain problems, such as elliptic problems with discontinuous or highly oscillatory coefficients. The method discussed here solves this problem by using a wavelet transform and Schur complements to obtain the necessary coarse grid, interpolation, and restriction operators. A factorized sparse approximate inverse is used to improve the efficiency of the resulting method. Numerical examples are presented to demonstrate the utility of the method. (Received September 21, 2006)