In this paper there are presented some multipole techniques for solving boundary integral equations in electromagnetism. The author uses a sparse approximate inverse as a smoother for an algebraic two-grid cycle where the inter-grids operators are based on spectral information from the preconditioned matrix. The sparse approximate inverse is computed from the near-field part of the dense coefficient matrix and the pattern is prescribed in advance by using physical information. The numerical results on small and medium size problems from radar cross section calculations illustrate this method.

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MSC:

78M25	Numerical methods in optics (MSC2010)	Cited in **11** Documents
65F10	Iterative numerical methods for linear systems	
65F50	Computational methods for sparse matrices	
65N38	Boundary element methods for boundary value problems involving PDEs	
65R20	Numerical methods for integral equations	
78A45	Diffraction, scattering	
78A50	Antennas, waveguides in optics and electromagnetic theory	

Keywords:

iterative methods; Frobenius-norm minimization method; spectral preconditioner; additive two-grid cycles; electromagnetic scattering applications

Software:

HSL

Full Text: DOI

References:

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