

Numerical solution method for the $\bar{\partial}$ -equation in the plane

A fast method for solving $\bar{\partial}$ -equations of the form $\bar{\partial}v = T\bar{v}$ is presented, where v and T are complex-valued function of two real variables. The multigrid method of Vainikko is adapted to the problem with a FFT implementation. Convergence with rate $\mathcal{O}(h)$ is proved for the method applied to equations of the form above. One-grid and two-grid versions of the method are implemented and their effectiveness is demonstrated on an application arising in electrical impedance tomography (EIT).