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**Peter A Muller\*** (muller@math.colostate.edu), **David Isaacson**, **Gary Saulnier** and **Jonathan Newell**. *A finite difference approach to solving the D-bar equation.*

This talk is motivated by the inverse boundary value problem of electrical impedance tomography (EIT). The D-bar equation arises when using complex geometrical optics to solve the full non-linear EIT problem. This partial differential equation is traditionally solved numerically with integral equation solvers. We seek to solve the D-bar equation in its original form via finite differences. This results in solving a system of first order PDEs. Here we develop second-order schemes for solving a general class of D-bar problems. These schemes are then applied to image reconstruction algorithms, which motivated their development. (Received September 15, 2014)