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*Limited angle acousto-electric tomography with complete wave modelling.*

In acousto-electric tomography the goal is to reconstruct the interior conductivity distribution in a bounded domain. The data is in the form of boundary measurements of currents and voltages taken while the domain is penetrated by an externally generated acoustic wave. This leads to a coupled-physics inverse problem.

The problem is approached in two steps: first, we model carefully the acoustic wave and derive a framework for the reconstruction of the interior power density based on the corresponding boundary measurements; second, an optimization scheme using total variation regularization is used for the reconstruction of the conductivity distribution from the power density.

The reconstruction algorithm is implemented numerically and the feasibility, stability and efficiency is demonstrated on various numerical examples. In particular we address the limited angle problem, where only a small part of the boundary is accessible for measurements. (Received September 24, 2018)