

1037-45-120

Leonid A Kunyansky* (leonk@math.arizona.edu), Department of Mathematics, University of Arizona, 617 N. Santa Rita Ave., Tucson, AZ 85721. *Quantitatively correct reconstruction in problems of thermoacoustic tomography with detectors placed on open surfaces.* Preliminary report.

In applications of thermo-acoustic tomography the detectors have to be placed on finite (bounded) and open surfaces. For stability reasons these surfaces should also satisfy the well-known "visibility" condition. We present numerical methods for quantitatively correct reconstruction from the data corresponding to such measurement configurations. These methods are based on approximations of propagating waves by single-layer potentials with the densities supported on the measurement surfaces. Preliminary numerical experiments in 2-D show that stability and accuracy of such reconstructions are similar to those resulting from exact inversion formulas applied to full data sets. (Received January 28, 2008)