

Applied mathematics

Simultaneous reconstruction of outer boundary shape and conductivity distribution in electrical impedance tomography

Nuutti Hyvönen

Aalto University, Finland

Simultaneous retrieval of the exterior boundary shape and the interior admittivity distribution of an examined body in electrical impedance tomography is considered. The reconstruction method is built for the complete electrode model and it is based on the Fréchet derivative of the corresponding current-to-voltage map with respect to the body shape. The reconstruction problem is cast into the Bayesian framework, and maximum a posteriori estimates for the admittivity and the boundary geometry are computed. The feasibility of the approach is evaluated by experimental data from water tank measurements.

This is joint work with Jérémie Dardé, Aku Seppänen and Stratos Staboulis.