

Ksenia OSTANINA
Jarmila DĚDKOVÁ

IMPLEMENTATION OF MAGNETIC FIELD DATA TO IMPEDANCE TOMOGRAPHY

ABSTRACT

A new modification of the recent impedance tomography technique is presented in the paper. This new technique is used for non-invasive imaging of the head tissues conductivity distribution and its changes. The algorithm based on one component of the measured magnetic flux density is introduced. The reconstructed conductivity image could be obtained through iterative solution of a corresponding matrix equation. According to the present algorithm, which uses one magnetic flux density component, numerical simulations were performed for two dimensional realistic human head model (consisting of the scalp, skull and brain) with the isotropic target conductivity distributions. By means of the algorithm, the reconstruction of skull and brain conductivity ratios could be figured out even under the condition that only one current is injected into the brain.

Keywords: *impedance tomography, non-invasive imaging, head tissue conductivity, magnetic flux density, iterative solution matrix equation, algorithms, numerical simulation, models, imaging.*