
UP 13: Poster: Boden- und Agrarphysik

Time: Tuesday 14:00–15:00

Location: Poster C

UP 13.1 Tue 14:00 Poster C

Simulated annealing methods and ERT-Computertomography

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The **E**lectrical **R**esistivity **T**omography has become an advanced exploration tool for many near surface-investigations (e.g. mineral exploration). After placing electrodes inside and close to the surface, electric currents are injected at some electrodes and the electric potentials induced by those currents are measured at the others.

The success of such measurements depends on i) how much information is contained in the so-called cost function (always the key function

in the inverse problem of tomography), ii) how satisfactorily the cost function can be minimized.

In the present work we concentrate on ii): We compare standard methods, such as Gauss-Newton-, Levenberg-Marquardt-, Powell's Dog Leg procedure (1,2), with simulated annealing procedures. The last of these are most effective if the cost function contains many relative minima, because the detection of the global minimum becomes extremely difficult or even impossible when standard methods are applied.

(1) A. Kleefeld, Diplomarbeit, Fachhochschule Aachen, Abteilung Jülich, 2005

(2) S. Jongen, Diplomarbeit, Fachhochschule Aachen, Abteilung Jülich, 2006