

MULTI-FREQUENCY DATA INVERSION IN GEOPHYSICAL APPLICATIONS

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This work aims to detect or infer, by non destructive investigation of soil properties, inhomogeneities in the ground or the presence of particular conductive substances. A nonlinear model is used to describe the interaction of an electromagnetic field with the soil.

Starting from electromagnetic data collected by a ground conductivity meter (GPR), we reconstruct, assuming that the electrical conductivity is known in every layer, the magnetic permeability of the soil with respect to depth, with a regularized Gauss-Newton method. We propose an inversion method, based on the low-rank approximation of the Jacobian of the nonlinear model.

This algorithm has been tested by numerical experiments on synthetic data sets.

REFERENCES

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