



## **A Greedy Algorithm for the Reconstruction of Boundary Layers from Gravitational Data**

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Prescribing a model for the mass density in different layers of the Earth, the reconstruction of boundary layers inside the Earth from gravitational data requires the solution of a nonlinear inverse problem.

In the past, the Geomathematics Group at the University of Siegen developed a greedy algorithm for the solution of linear inverse problems, called the Regularized Functional Matching Pursuit (RFMP). In this work, we will extend the concept of the RFMP to nonlinear inverse problems. In contrast to many existing algorithms for this type of problem, the approximate solution can be comprised of different types of basis functions. For example, both global and localized basis functions can be combined, such as spherical harmonics and radial basis functions, respectively. Furthermore, the solution is stabilized by a Tikhonov regularization to respect the ill-posedness of the inverse problem. Numerical results will be presented.