

1163-35-283

Juliette Leblond* (juliette.leblond@inria.fr), INRIA, B.P. 93, 06902 Sophia Antipolis, France. *Inverse moment estimation problems for Poisson-Laplace PDE in dimensions 2 and 3, and best constrained approximation in Hardy spaces; applications to paleomagnetism.*

From joint works with Laurent Baratchart, Eduardo A. Lima, Sylvain Chevillard, Elodie Pozzi.

We consider families of inverse potential problems for Poisson-Laplace PDE, in domains of the plane $R^2 \simeq C$, complex plane, or R^3 , with source term in divergence form, $\operatorname{div} S$. They arise for instance from Maxwell's equation in magnetostatics. The given data corresponds to pointwise values of components of the magnetic field taken at some distance from the support of the magnetization S , in some specific geometry. Actually, this concerns magnetized rock samples (like meteorites), whose magnetic field is recorded by a magnetometer. The aim is to recover some characteristics of the magnetization S , like its net (0 order) moment, in order to gain preliminary information for solving the full issue of estimating S itself. These are ill-posed problems. They are regularized by solving corresponding best constrained approximation issues that we state and solve in Hardy spaces. (Received September 07, 2020)