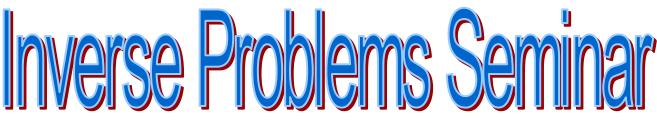Department of Mathematics
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Inverse Problems Seminar

From inverse coefficient problems to convex semidefinite optimization

Prof. Bastian von Harrach
University of Frankfurt

Abstract

Several applications in medical imaging and non-destructive material testing lead to inverse elliptic coefficient problems, where an unknown coefficient function in an elliptic PDE is to be determined from partial knowledge of its solutions. This is usually a highly non-linear ill-posed inverse problem, for which unique reconstructability results, stability estimates and global convergence of numerical methods are very hard to achieve.

In this talk we will consider the inverse coefficient problem of electrical impedance tomography (EIT) with finitely many measurements and a finite desired resolution. We will demonstrate how standard reconstruction methods suffer from only local convergence, resp., the problem of local minima. We will then show how to overcome these problems by rewriting the problem as an equivalent uniquely solvable convex non-linear semidefinite optimization problem.

Date: November 29, 2023 (Wednesday)
Time: 4:00pm – 5:00pm (Hong Kong Time)
ZOOM link: https://cuhk.zoom.us/j/98241093146
Meeting ID: 982 4109 3146

All are Welcome