



FMSP Lectures

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Inverse elastic wave scattering
from rigid diffraction gratings

December 19 (Thursday) 17:00 ~ 18:00 Room 270

Abstract:

In recent years, Schwarz reflection principles have been used to prove uniqueness in inverse scattering by bounded obstacles and unbounded periodic structures of polygonal or polyhedral type with only one or several incident plane waves.

Such a principle for the Navier equation is established by far only under the third or fourth kind boundary conditions, and still remains unknown in the more practical case of the Dirichlet boundary condition.

In this talk we will discuss the uniqueness in inverse elastic scattering from rigid diffraction gratings of polygonal type, where the total displacement vanishes on the scattering surface. Mathematically, this can be modeled by the Dirichlet boundary value problem for the Navier equation in periodic structures. We prove that such diffraction gratings can be uniquely determined from the near-field data corresponding to a finite number of incident elastic plane waves.

This is a joint work with J. Elschner and M. Yamamoto.