Identification of a local perturbation in unknown periodic layers

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Abstract

We revisit the differential sampling method introduced in [1] for the identification of a local perturbation in unknown periodic layers. We provide a theoretical justification of the method that avoids assuming that the local perturbation is also periodic. Our theoretical framework uses functional spaces with continuous dependence with respect to the Floquet-Bloch variable. The corner stone of the analysis is the justification of the Generalized Linear Sampling Method (GLSM) in this setting.

Keywords: inverse problem, Periodic layers, Floquet-Bloch Transform, domain reconstruction

References

[1] H. Haddar and T.P. Nguyen, Sampling methods for reconstructing the geometry of a local perturbation in unknown periodic layers. Computers Mathematics with Applications, 74(11), 2831-2855.,