TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Zoom meeting

Monday, November 1 2021, 2:30 p.m.

Wave decay for domains star-shaped with respect to infinity

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Abstract: We wish to understand how the geometry of a domain $X \subset \mathbb{R}^d$ affects the decay of solutions to the wave equation on X with Dirichlet boundary conditions.

The case in which $\mathcal{O} = \mathbb{R}^d \setminus X$ is bounded is a classical obstacle scattering problem. In the special case when $\mathcal{O}$ is star-shaped, decay of solutions of the wave equation is a classical result of Morawetz. We study certain sets X which have $\mathbb{R}^d \setminus X$ unbounded. These sets X are unbounded in some directions, and bounded in others. We introduce a notion of "star-shaped with respect to infinity" and show that this condition has implications for the behavior of the resolvent of the Laplacian. For waveguides which are star-shaped with respect to infinity, this implies some wave decay.

This talk is based on joint work with K. Datchev.