Analysis and Differential Geometry Seminar

How much can one learn a PDE from its solution?

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Abstract: In this work we study a few basic questions for PDE learning from observed solution data. Using various types of PDEs, we show 1) how the approximate dimension (richness) of the data space spanned by all snapshots along a solution trajectory depends on the differential operator and initial data, and 2) identifiability of a differential operator from solution data on local patches. Then we propose a consistent and sparse local regression method (CaSLR) for general PDE identification. Our method is data driven and requires minimal amount of local measurements in space and time from a single solution trajectory by enforcing global consistency and sparsity.

Thursday, December 1, 2022, 4:00 pm
PAIS 230

Mathematics
Emory University