Department of Applied and Computational Mathematics and Statistics Colloquium

J. Nathan Kutz

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University of Washington

will give a lecture entitled:

Data-Driven Modeling and Dimensionality Reduction

Abstract

Dimensionality reduction is a common method for rendering tractable a host of problems arising in the physical, engineering and biological sciences. In recent years, methods from data analysis have started playing critical roles in more traditional applied mathematics problems typically analyzed with dynamical systems and PDE techniques. In this talk, three disparate examples will be considered from (1) image processing, (ii) PDE solution techniques and (iii) neuroscience. In each case, dimensionality reduction, achieved here through a principal component analysis (PCA) (or orthogonal mode decomposition(POD)), and/or dynamic mode decomposition and/or compressive sensing scheme, achieves remarkable success in providing a mathematical framework which is more amenable to analysis, thus allowing for a better characterization and analysis of the fundamental behavior of the given physical, engineering or biological system of interest.

Wednesday, November 28,2012
4:00 p.m. to 5:00 p.m.
127 Hayes-Healy Center