PHYSICAL MATHEMATICS SEMINAR

APPLICATION OF DIMENSIONALITY REDUCTION METHODS

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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 (i) image processing, (ii) PDE solution techniques and (iii) neuroscience. In each case, dimensionality reduction, typically achieved through a principal component analysis (PCA) or orthogonal mode decomposition (POD), i.e. a singular value decomposition, achieves remarkable success in providing a mathematical framework which is much more amenable to analysis, thus allowing for a better characterization of the physical, engineering or biological system of interest.

TUESDAY, SEPTEMBER 20, 2011
2:30 PM
Building 2, Room 105

Reception at 3:30 PM in Building 2, Room 290
(Math Dept. Common Room)

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