



WPI

HAROLD J GAY LECTURE SERIES



PDEs and Fractals • Geometry with its applications has been at the heart of the development of partial differential equations and boundary value problems since the very beginning. In physics, biology, economics, and other applied fields, a variety of new problems are now emerging that display unusual geometrical, analytical and scaling features, possibly of fractal type. The objective of these lectures is to acquire the view of outstanding mathematicians on the subject of differential equations and fractals, and their developments and applications, in a broad perspective encompassing both classical highlights and contemporary trends.

Robert Lipton

S.B. Barton Professor

Department of Mathematics

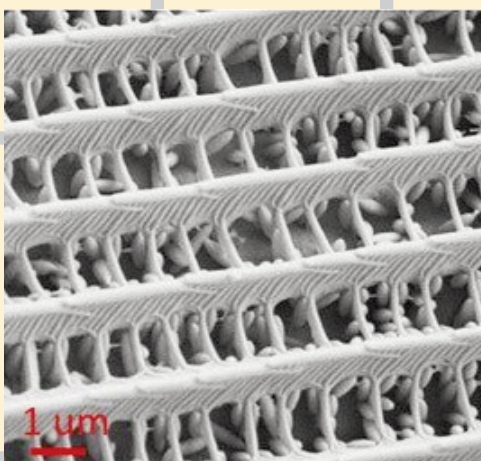
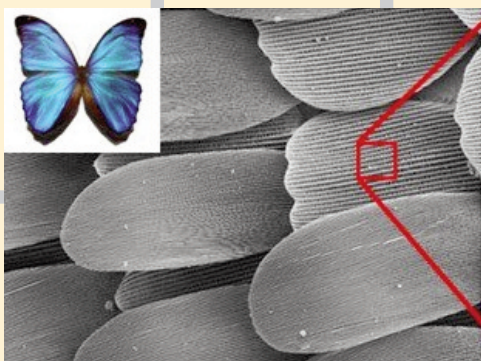
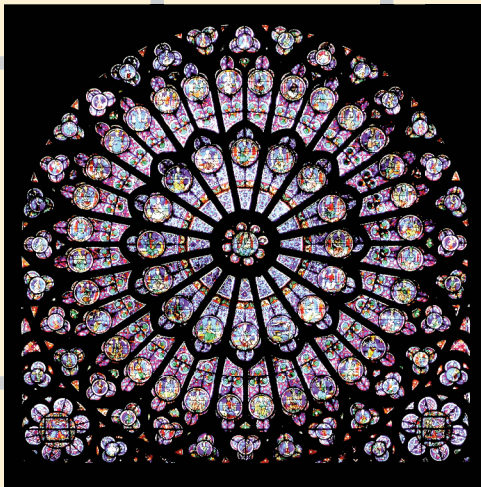
Center for Computation and Technology

Louisiana State University

Manipulating Light with Metamaterials and Photonic Crystals

Friday, October 6, 2017

4:00pm, Salisbury Labs 104



ABSTRACT Metamaterials are patterned materials whose electromagnetic or acoustic properties are controlled by their internal structure. Here, the light is controlled by an internal structure that is much smaller than the light's wavelength. A familiar example of a metamaterial is stained glass made from gold nanoparticles. On the other hand, when the internal structure is of the same length scale as the wavelength, destructive interference can occur giving rise to frequency intervals where no waves can propagate inside the material. These are the well-known photonic band gap crystals; their effects include the structural coloration of butterfly wings and they have been used in ingenious ways for optical communication. In this lecture we provide a brief history of metamaterials and photonic band gap crystals and a flavor of the mathematics of modeling and design.

Sponsored by WPI and hosted by the Department of Mathematical Sciences

Refreshments available before the lecture • Participation of faculty and students is most welcome

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Poster Organization: Rhonda Podell