WPI

HAROLD J GAY

LECTURE SERIES

PDEs and Fractals

The inaugural lectures will be delivered by

Professor Louis Nirenberg

Courant Institute of Mathematical Sciences, NYU

Tuesday, Oct. 4, 11am
Distance to the boundary and Hamilton-Jacobi equations

Friday, Oct. 7, 11am
Estimates for laminar materials

WPI Stratton Hall 203

ABSTRACTS We study the set of points where the distance function to the boundary is not smooth. Its dimension is estimated. A similar result is derived for the singular set of solutions of some Hamilton-Jacobi equations. Some problems on laminar materials lead to elliptic systems, with coefficients that are smooth in subregions but may jump from region to region. It is of interest to get estimates on the solution and its derivatives, in each subregion, which are independent of the narrowness of the regions. Some such estimates are presented.

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.

Sponsored by WPI and hosted by the Department of Mathematics
Coffee and tea available one half hour before lecture time
Participation of faculty and students is most welcome