COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

Distinguished Colloquium Series in Interdisciplinary & Applied Mathematics

Friday, April 11, 2014

12:00-1:00 PM, 903 School of Social Work (1255 Amsterdam Ave. @ 121st Street)

George C. Papanicolaou

Robert Grimmett Professor of Mathematics, Stanford University

"Correlation Based Imaging and Geophysical Applications"

In the emerging interdisciplinary science of imaging, in all its forms, sensor imaging in complex media has a special place. This is because of the mathematical challenges it poses as well as because of the many applications that depend on its success, from high-resolution medical imaging to seismic imaging, satellite imaging, etc. I will give a brief overview of the mathematical issues that come up and then introduce correlation based, or interferometric methods that are well suited to deal with complex media. I will give examples from seismic imaging where correlation based methods have had a huge impact recently.

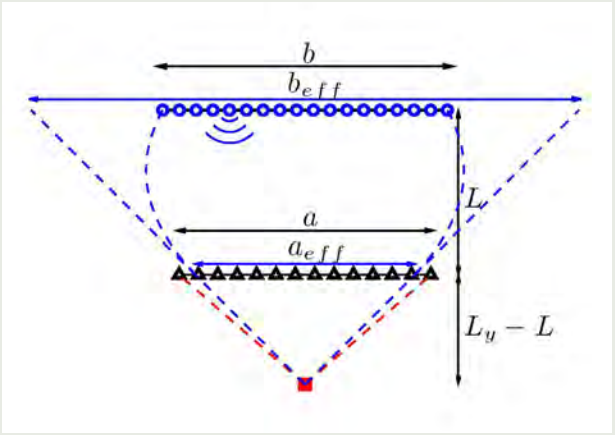

Image: Virtual source imaging through complex media

George Papanicolaou has had major impact across many fields and in the overall direction of modern Applied Mathematics. The overarching theme of his work is the mathematical and computational study of multi-scale phenomena. His work spans direct and inverse problems in, for example, electromagnetic wave propagation (linear and nonlinear), sound waves in the in the Earth's ocean and lithosphere, diffusion in porous media. His very recent work has focused on imaging and communication systems, including time-reversal arrays.

Papanicolaou is a Member of the US National Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, a SIAM Fellow and a Fellow of the American Mathematical Society. Papanicolaou has given a Plenary Lecture at the International Congress of Mathematicians (ICM-2003) and the Josiah Willam Gibbs Lecture of the AMS. He was awarded the SIAM von Neumann Prize (2006). The degree of Doctor Honoris Causa of the University of Paris VII was conferred on Papanicolaou in 2011.

Organizing Committee: D. Goldfarb (IEOR), E. Grinspun (Computer Science & APAM), I. Karatzas (Mathematics), and M.I. Weinstein (APAM & Mathematics)

For information, please contact Professor M.I. Weinstein, miw2103@columbia.edu