



THE UNIVERSITY OF
CHICAGO

Department of Statistics
STATISTICS COLLOQUIUM

LAURENT DEMANET

Department of Mathematics
Massachusetts Institute of Technology

**The Unreasonable Effectiveness of the Second Dyadic
Decomposition for Large-Scale Seismic and Radar
Data Processing**

WEDNESDAY, March 12, 2014, at 12:30 PM
Room 277, Ryerson Physical Laboratory, 1100 E. 58th Street

ABSTRACT

Harmonic analysts are keen to decompose functions and operators into almost orthogonal components to control their constituent scales one by one. The prominent example is Littlewood-Paley theory, based on the “first” dyadic decomposition. A second dyadic decomposition was later introduced by Stein et al. to decompose functions not only in scale, but also in angle, to control the boundedness of some classes of oscillatory integrals. In this talk I will explain how, and why, these ideas are also reshaping the way many statistical and numerical questions are currently approached in wave-based imaging. Acknowledging the underlying geometry of a dataset or a simulation is becoming increasingly important as we enter the age of “extreme” computational scales.

For further information and inquiries about building access for persons with disabilities, please contact Kirsten Wellman at 773.702.8333 or send her an email at kwellman@galton.uchicago.edu. If you wish to subscribe to our email list, please visit the following website: <https://lists.uchicago.edu/web/arc/statseminars>.