



The University of Chicago
Department of Statistics

Seminar Series

PING MA

Department of Statistics
University of Illinois at Urbana-Champaign

A Journey to the Center of the Earth

MONDAY, January 12, 2009 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

At a depth of ~ 2890 km, the core-mantle boundary (CMB) separates turbulent flow of liquid metals in the outer core from slowly convecting, highly viscous mantle silicates. The CMB marks the most dramatic change in dynamic processes and material properties in our planet, and accurate images of the structure at or near the CMB – over large areas – are crucially important for our understanding of present day geodynamical processes and the thermo-chemical structure and history of the mantle and mantle-core system. In addition to mapping the CMB we need to know if other structures exist directly above or below it, what they look like, and what they mean (in terms of physical and chemical material properties and geodynamical processes). Detection, imaging, (multi-scale) characterization, and understanding of structure (e.g., interfaces) in this remote region have been – and are likely to remain – a frontier in cross-disciplinary geophysics research. I will discuss the statistical problems and challenges in imaging the CMB through generalized Radon transform.