Global-COE Frontier Seminar

Sound velocity measurements in a diamond cell by Brillouin scattering, and implications for Earth's interior

Speaker : Prof. Jay D. Bass
Affiliation : The University of Illinois at Urbana-Champaign
Date & Time : 10:30 - 12:00 Nov 06, 2009 on Friday
Place : Earth Science Bldg. 5F #503 COE Seminar Room
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Abstract:

Seismology provides us with highly detailed images of Earth’s interior, and models of how velocity changes with depth. These images are crucial for understanding the chemical composition of the interior, its thermal structure, and the buoyancy forces that drive mantle convection. In order to utilize the information from seismology, it is necessary to know the sound velocities in minerals and rocks at high pressures and temperatures.

This talk describes a method called Brillouin scattering that finding broad use for measuring sound velocities of minerals in the laboratory. Brillouin scattering is a laser light scattering technique that can be applied to measuring the elasticity of minerals in a diamond anvil cell. I will show some examples of Brillouin measurements and describe their application to the Earth.