IRIS/SSA Distinguished Lectureship—Dr. Cliff Frohlich University of Texas at Austin

Deep Earthquakes and the Secrets of Seismology

Michigan Technological University

Monday—7:00pm
March 3, 2008
7:00pm
Fisher 135

Dr. Cliff Frohlich
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We learn about the interior of the Earth by applying physics to our study of it. Dr. Frohlich will use familiar items to illustrate Earth structure and explain many the study of the Earth and earthquake mechanics using seismological techniques. Seismology as presented by Frohlich will involve raw and cooked eggs, baseballs, coffee pots, champagne bottles, diamonds, air hockey, and ultrasound. In every profession there are 'secrets', that is, basic information that is known to those who practice the profession but are either unknown or misunderstood by the public. Frohlich will reveal those secrets to all, and you will be surprised at how "easy" the most-complicated concepts turn out to be!

About a quarter of all earthquakes originate at depths more than 60 km (40 miles) beneath the Earth's surface, and some at depths as great as 700 km (440 miles). Since their discovery in 1927, these 'deep' earthquakes have been an enigma because pressures and temperatures are too great at these depths for ordinary brittle fracture to occur. Deep earthquakes pose a serious hazard in a few parts of the world, including Romania, parts of South America, and (possibly) in the northwestern United States. Dr. Frohlich's talk will address what is known and unknown today about the mechanical origin of deep earthquakes and explain why they have been used disproportionately in studies of the Earth's interior structure, as well as providing insight to the methods used by scientists when nobody is looking.