Department of Mathematical Sciences

Fall 2015

Colloquium Series

Friday, October 30, 2015 at 3pm in Bell Hall 143

Dr. Cheng Zhan

Division of Seismic Imaging Processing
TGS Houston

A Survey of Mathematical Tools in Geophysics

In the talk, we will discuss several important topics in geophysics with a special emphasis on the underlying mathematics. There are two important components in seismic data processing. One is signal processing, such as noise attenuation, multiple elimination, data regularization. The related mathematics includes basic statistics, optimization, and anti-leakage Fourier transform. The other is inversion, where the recorded data is transformed to produce the geological structure of the subsurface based on a velocity model, which usually takes many iterations of seismic tomography. In geophysics, it is called migration. Unfortunately, the solution to such problem is not unique. Actually, mathematicians have studied similar problem for a long time. âĂIJCan we hear the shape of a drum?âĂİ is a typical example. After introducing the necessary geophysical concepts, we will be focusing on the application of these mathematical tools to solving geophysics problems.

For further information, please contact Dr. Emil Schwab, eschwab@utep.edu