

Purdue University  
Earth, Atmospheric, and Planetary Sciences  
Special Geophysics Seminar



**Prof. Fan-Chi Lin**  
Geology and Geophysics  
University of Utah

# Seismic Interferometry Across the Continental US and Recent Developments in Dense Array Based Imaging

Thursday, October 20, 2016

10:30-11:30 AM

HAMP Rm 2201

Refreshments also Provided

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**Abstract:** Over the last 10 years, the large-scale dense seismic network of EarthScope USArray Transportable Array has progressively been deployed with a ~70 km station spacing to cover the entire contiguous United States. More recently, geophone dense arrays with hundreds to thousands of stations have been deployed to record continuous seismic data on a much smaller spatial scale. The unprecedented amount of high quality broadband and geophone seismic data allows seismologists to image detailed earth structure on various different scales from shallow to deep. In particular, innovative seismic analyzing techniques have been developed to better utilize the array configuration and to extract new constraints on the structure of the earth that were not available before. In this presentation, I will first discuss some of the recent developments in seismic interferometry and tomography. I will explain how seismologists can now extract useful seismic signals from diffusive wavefields, such as the ambient noise wavefield and the earthquake coda wavefield. I will then demonstrate how these new developments combined with data from USArray and various geophone arrays improve our understanding of earth interior structure.

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Prof. Fan-Chi Lin is an Assistant Professor in Geology and Geophysics at the University of Utah. He received his PhD at the University of Colorado Boulder and was a Director's Postdoctoral Fellow at Caltech's Seismological Laboratory. In 2015 Prof. Lin was awarded the Charles F. Richter Early Career Award from the Seismological Society of America for his wide range of contributions in seismology, in particular in the area of seismic interferometry using ambient seismic noise to construct tomographic images of the Earth's crust and upper mantle. Prof. Lin and colleagues have then utilized diffuse seismic energy to image seismic waves traveling through the Earth's core. He has worked on recent "Large N" seismic experiments using very dense seismic arrays to perform high-resolution 3D imaging of shallow crustal structure. Prof. Lin is also applying seismic tomography to image the magmatic system beneath Yellowstone.