

Solid Earth Physics Seminar, Harvard University

Thursday, 18 May 2017, 1:00 pm
Faculty Lounge, Hoffman Laboratory, 20 Oxford Street

***Fast Computation of Elastodynamic Half-space
Green's Function using the Equipartition Theorem***

Francisco J (Paco) Sánchez-Sesma
Institute of Engineering, UNAM
Universidad Nacional Autónoma de México

Abstract:

The imaginary part of the elastodynamic Green's function is proportional to the average of the field correlations within a diffuse field. Theory asserts that a cocktail of plane waves that fulfill the Principle of Equipartition of Energy (PEE) represents a diffuse field. Therefore, correlations allow computing the Green's function. Here we present a practical approach for fast and accurate computation of the elastodynamic Green's functions of a half-space. The method uses the PEE and the partition factors arise explicitly. The imaginary parts of Green's tensors for displacements and stresses emerge from average cross correlations of the corresponding fields generated by the incidence of body and surface waves with amplitudes weighted by partition factors. The Hilbert transform gives the real part. Results for the 3D half-space show the potential of the method. We discuss possible implications of results.