**Title:** Ambient seismic noise interferometry and the continuous monitoring of high rise buildings.

**Abstract:** The linear seismic response of a building is commonly extracted from ambient vibration measurements. Seismic deconvolution interferometry performed on ambient vibrations can be used to estimate the dynamic characteristics of a building, such as the shear-wave velocity and the (apparent) damping. The continuous nature of the ambient vibrations allows us to measure these parameters repeatedly and to observe their temporal variations.

After presenting the concepts and techniques of seismic interferometry et continuos seismic monitoring I will show different Earth-science related applications, then I will present a specific study of a continuous seismic monitoring of a high rise building.

We used 2 weeks of ambient vibration recorded by 36 accelerometers installed in the Green Building at the MIT campus to monitor the shear-wave speed and the apparent attenuation factor of the building. Due to the low strain of the ambient vibrations, we observe small speed changes followed by recoveries. By comparing these results with local weather parameters, we show that the air humidity is the factor dominating the velocity variations in the Green Building. The data from the Green Building present also some evidence of non-linear behavior that we will try to characterize.