ID: Type: **Oral**

Exciting Cavities: Understanding the Seismic Wave Propagation Inside and Around an Underground Cavity

In the past years major advances have been done concerning the development of the techniques used within an OSI. A critical task is the verification of the presence of a cavity caused by the underground nuclear explosion. One method to investigate the geophysical properties of a cavity allowed by the Comprehensive Nuclear-Test Ban Treaty is referred to as resonance seismometry - using passive or active seismic techniques and relying on seismic cavity vibrations. This method however is still under development and has not been successfully tested in the field yet. This motivates to investigate this problem on a purely numerical level. We study the full elastic wave field in three dimensions and consider the effects from an incoming plane wave as well as point source located in the surrounding of the cavity at the surface. Further we want to demonstrate the specific characteristics of the scattered wave field from a P-waves and S-wave separately. For our computations we use the discontinuous Galerkin Spectral Element Code SPEED. The computations are carried out on the Vienna Scientific Cluster. The accurate numerical modeling will help to set a proper scientific base of OSI and contribute to bringing the treaty into force.

Primary author: ESTERHAZY, Sofi (University of Vienna, Austria)

Presenter: ESTERHAZY, Sofi (University of Vienna, Austria)

Track Classification: 3. Advances in sensors, networks and processing