ID: Type: **Poster**

Acoustic-Seismic Coupling in Porous Ground - Measurements and Analysis for On-Site-Inspection Support

During an on-site inspection (OSI) for the Comprehensive Nuclear Test-Ban Treaty the hypocentre of a suspected nuclear explosion has to be located with a precision of approximately 0.1 km. One possibility is the setup of a local seismic network, the seismic aftershock monitoring system (SAMS), to detect aftershock events caused as a consequence of the explosion. These events show a very weak magnitude so man-made noise can disturb the SAMS measurements. In a project for the Research Award for Young Scientists and Engineers we analyse airborne acoustic signals which excite soil vibrations when coupling into the ground that can disturb SAMS measurements. Such signals can be caused by vehicles or helicopters, used by inspectors during an OSI. The analysed signals are broadband (measurements of jet aircraft) and periodic CW signals, produced by a speaker. The research is focused on surface waves, excited by acoustic-seismic coupling in the surrounding of a sensor. The measured seismic signal is increased for constructive interference of the surface waves at the position of the sensor, which can occur for specific acoustic frequencies and elevation angles of the signal. The analysis shall give recommendations for an OSI to prevent or reduce such disturbing signals.

Primary author: LIEBSCH, Mattes (TU Dortmund, Experimentelle Physik III)

Presenter: LIEBSCH, Mattes (TU Dortmund, Experimentelle Physik III)

Track Classification: Theme 3: Advances in Sensors, Networks and Processing