

## AGA 8: Non-Nuclear Verification

Time: Friday 12:35–13:25

Location: H-HS XVII

AGA 8.1 Fri 12:35 H-HS XVII

**Acoustic and Seismic Modelling of Tracked-Vehicle Signals for Monitoring and Verification** — ●MATHIAS PILCH — Technische Universität Dortmund, Experimentelle Physik III, Dortmund, Germany

To better understand the characteristics of acoustic and seismic signals of tracked vehicles measured when passing a sensor line, we numerically model acoustic pressure-pulse and seismic force-pulse responses in air and a layered soil that is similar in its seismic properties to that found at the original measurement site. For tracked vehicles, the strongest sources of acoustic excitation are the exhaust, the intakes and the track mechanism. Seismic excitation is caused by road wheels rolling over track elements, applying vertical force pulses to the ground. Acoustic excitation stems mostly from the engine exhausts and couples into the ground. Acoustic and seismic signals from single pressure pulses are computed by an acoustic-seismic-modelling program with receiver stations at many slant distances. The acoustic-seismic coupling observed in the model generally fits to the expectations. The overall goal is to simulate a pass of a tracked vehicle by superposition of acoustically and seismically produced signals.

AGA 8.2 Fri 13:00 H-HS XVII

**Preventive Arms Control for Small and Very Small Aircraft and Missiles** — ●MATHIAS PILCH and JÜRGEN ALTMANN — Technische Universität Dortmund, Experimentelle Physik III, Dortmund, Germany

Small and very small armed uninhabited air vehicles (UAVs) and missiles are actively pursued by militaries worldwide. Despite limited payload, militarily significant damage could be achieved by precision, by hitting sensitive spots, and by attacking in swarms. Principally, UAVs and missiles down to 1 mm size and below could be built in the future. A wide-spread deployment can endanger arms control, destabilise the military situation between adversaries, and provide qualitatively new tools for terrorists. In our project we are preparing lists of small UAVs and missiles currently deployed as well as in research and development, detailing their basic properties; these lists will be made available publicly. They allow statements about the state of technology, scale of research and development efforts and proliferation at present and in the future. In the next phase, the current status and trends will be analysed from a natural-science and technical viewpoint and used to extrapolate developments over a period of 5-10 and 10-20 years. In the final phase options for preventive limitations and their verification will be considered systematically.