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Field measurements with a CASSE-like experiment setup in a virtually boundary-free environment

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The CASSE experiment aboard the Rosetta lander Philae will record artificial and natural vibrations of the cometary surface. One of the scientific goals is to determine elastic properties like shear and compressional wave velocities, bulk modulus, shear modulus, and Poisson ratio. The variation of these parameters, especially with depth, will also be investigated.
Near-by walls of in-house laboratory setups are likely to create artificial reflections and refractions that have travel times close to the inter-foot travel times we wish to observe. To avoid such artefacts, we conduct our measurements in the virtual infinity of fallow fields, meadows or large asphalted areas. Here we do not expect lateral walls, but vertical layering and randomly structured soils. As source we use a small drop weight device and a hammer.
We conduct experiments with a sensor distribution in the same geometry and spacing as realized in the Philae landing gear, i.e. a triangular configuration with sensor spacing of about 2.5 m. As sensors, we use the same accelerometer type that is built into the Philae feet. The data is used to test and further develop methods and software for their interpretation, as preparation for the investigation of the comet. We present measured waveforms and first inversion results.