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**Accelerometer measurements of acoustic-to-seismic coupling above
buried objects**

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The surface velocity of sand inside a large PVC container, induced by the sound pressure from either a large loudspeaker radiating into an inverted cone and pipe or a B & K point source loudspeaker mounted with its axis vertical, has been measured using accelerometers. Results of white noise and stepped frequency excitation are presented. Without any buried object the mass loading of an accelerometer creates resonances in the spectral ratio of sand surface velocity to incident acoustic pressure i.e. the acoustic-to-seismic (A/S) admittance spectra. The A/S responses above a buried compliant object are larger and distinctive. The linear A/S admittance spectra in the presence of a buried electronic components box have been studied as a function of burial depth and sand state. The nonlinear responses above the buried box have been studied as a function of depth, sand state and amplitude. Predictions of a modified 1D lumped parameter model have been found to be consistent with the observed nonlinear responses. Also the modified model has been used to explain features of the A/S responses observed when using an accelerometer without any buried object [work supported by DSTL, UK].