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**Vector surface velocity measurement using contour scanning laser vibrometers for the detection of landmines**

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Much work has been done studying the detection of buried landmines using acoustic excitation and measuring the vibration response of the ground using Laser Doppler Vibrometry (LDV). We examine the benefits of measuring the full three-dimensional velocity response of the ground surface when a landmine is present. Three-dimensional velocity measurements provide a richer data set for identification of buried targets and avoid potential errors associated with projecting the surface velocity vector onto a single laser line of sight direction. We present results of a study conducted using landmines buried in sand in a laboratory environment. The data were obtained using a novel five-axis laser vibrometry system, which uses a single point LDV system to measure the surface of the sand from multiple angles at each measurement location. Data will be presented showing the consequences of a buried landmine on the three-dimensional velocity response of a contoured ground surface.