RESPONSE OF BURIED STRUCTURES UNDER SHOCK LOADING: NUMERICAL SIMULATIONS AND EXPERIMENTAL TESTS.

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The Centre d'Etudes de Gramat has developed a numerical approach using computer codes, to assess the vulnerability of underground structures subjected to a near-surface explosion.

In order to validate the numerical modeling, a specific test site named : Zone d'Etudes Ultimes des Structures has been built.

This test facility has been designed to generate an explosive loading on the soil, in the range [0, 1 kbar]. The mechanical response of soil and buried generic structure are recorded by stress sensors, strain gages, accelerometers and displacement sensors. The aim of the test site is to facilitate the comparison of the numerical and experimental results : the loading is plane and axi-symetric.

This paper presents finite element models and parametric studies performed with the code ABAQUS Explicit. Some comparisons between numerical and experimental results in the domains of free-field and soil-structure interaction are shown.