

EXPERIMENTAL AND NUMERICAL INVESTIGATION OF A WEAK BLAST WAVE INTERACTION WITH A THREE LEVEL BUILDING

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ABSTRACT

It is well known that strong blast waves are lethal for a living creature, while it is believed that weak blast waves are harmless. This might be the case when there is a head-on collision between an on-coming weak blast wave and the considered body; however, a completely different scenario takes place when the initially weak (safe) blast wave hits a body after multiple reflections from existing walls. Such cases take place when a weak blast wave, resulting from a sudden explosion, hits a residential complex.

In the conducted experiment a very simple model of a three level building is subjected to a weak blast wave. The evolved wave pattern inside the building rooms is recorded by a sequence of schlieren photos and the prevailing pressures are deduced from numerical simulations.