INFLUENCE OF THE EXPLOSION CENTRE ON THE SHOCK WAVE PROPAGATION IN CONFINED ROOM

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Nowadays, it well establishes that the knowledge of shock wave propagation available in free field cannot apply in confined environment especially when it comes to the prediction of reflected shock wave. With the increasing of accidental or intentional detonation of explosive in confined or urban environment, it is important to understand well and study the propagation of shock wave to provide behaviour prediction tools.
The present research focuses on the understanding of the influence of a variation of the explosion centre in confined room. How these variation affect the shock wave propagation and the reflection due to the confined environment. The shock wave is generated by the detonation of a stoichiometric hemispherical charge of propane-oxygen. The charge is placed in a small scale model (Hopkinson's scaling law) which represents a generic room building. The model is equipped with 29 pressure sensors distributed on the wall and the floor that allows recording pressure history data.
The goal of this study is to determine the evolution of the shock wave parameters such as the maximal overpressure or the arrival time thanks to the experimental results. The aim is also to predict the origin of the third reflected peaks.