

# **FI-BLAST: AN ENGINEERING TOOL TO ASSIST THE FAST ANALYSIS OF BLAST AND FRAGMENT LOADED STRUCTURES**

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## **ABSTRACT**

The effects of blast-fragmentation warheads need to be carefully characterized in a variety of applications like the protection of vehicles, of buildings, or the defeat of targets of any kind. Whereas detailed Finite Element models of the targets are often readily available, it is generally not feasible to model a detonation event of a warhead together with the structural response within a single simulation. The reasons are manifold, ranging from the prohibitive computational requirements to the lack of reliable fragmentation models for detonating shells in hydrocodes. With this situation in mind, we have developed a tool called FI-BLAST (**F**ast **I**nterface for **B**last-**F**ragment **L**oad **A**nalysis of **S**tructures). In the present paper, we describe the essential parts of the tool, namely the fragmentation model, the blast source and the blast propagation models. Validation examples are given for the models as well as the presentation of the general approach for the blast-fragmentation load analysis on a container structure.