

# Structural integrity under extreme loads

Topic: High-fidelity models of blast waves

**TITLE: Numerical models of Energetic materials**

## RESEARCH BACKGROUND:

General-purpose numerical platforms lack of detailed models for describing the detonation dynamics of energetic material. That is, explosive charges are usually modeled as homogeneous bodies, even though real explosive devices are strongly inhomogeneous and made of several components. This thesis aims to simulate, using a continuum mechanics approach, the detonation dynamic of real devices containing energetic materials.

## RESEARCH ACTIVITIES:

1. Literature research on state-of-the-art models for describing the detonation dynamics
2. Investigation of the most promising identified models in a CFD environment
3. Calibration of numerical models using experimental data
4. Numerical simulations of blast-loaded plates and validation against experiments

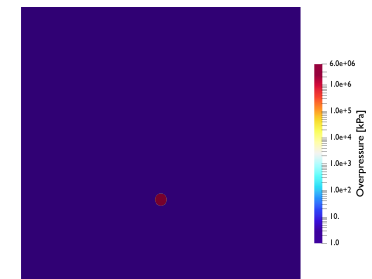
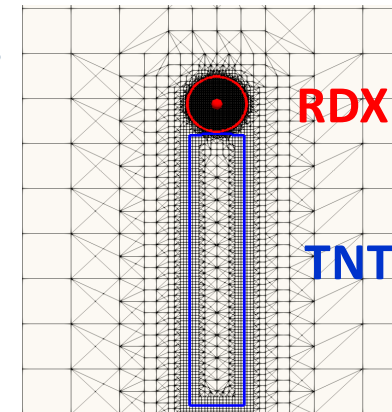
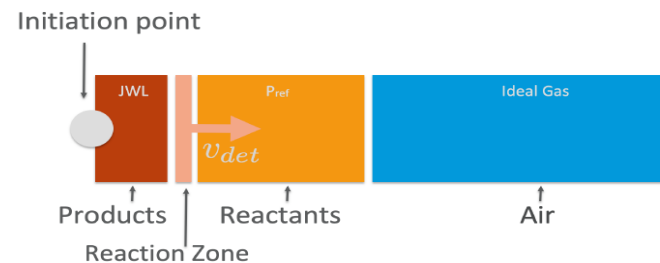
**METHODOLOGY:** Numerical - Analytical

**DURATION:** 6-9 months

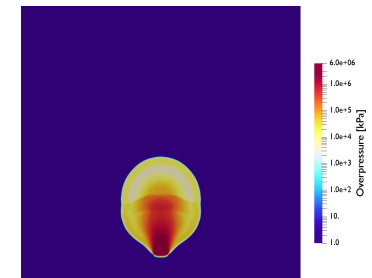
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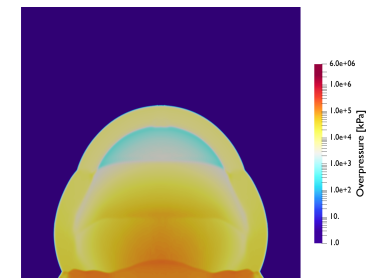
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