

Structural integrity under extreme loads

Topic: High-fidelity models of ballistic impacts

TITLE: Numerical approaches for modelling the ballistic impact onto metallic and ceramic protections.

RESEARCH BACKGROUND:

Evolving threat capabilities require an update of protective structures. Ballistic grade steels and ceramic armours have been developed in the last decades to increase the safety level of the platforms they are installed on. This thesis aims to build high-fidelity models of such protections starting from data acquired under dynamical loading at high strain rates.

RESEARCH ACTIVITIES:

1. Literature review on metallic and ceramic materials for ballistic protection.
2. Numerical calibration of material properties with data from Split-Hopkinson Pressure Bar.
3. Development of numerical models (including, but not limited to, FE and/or meshless approaches).

METHODOLOGY: Numerical-Experimental

DURATION: 9 months

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