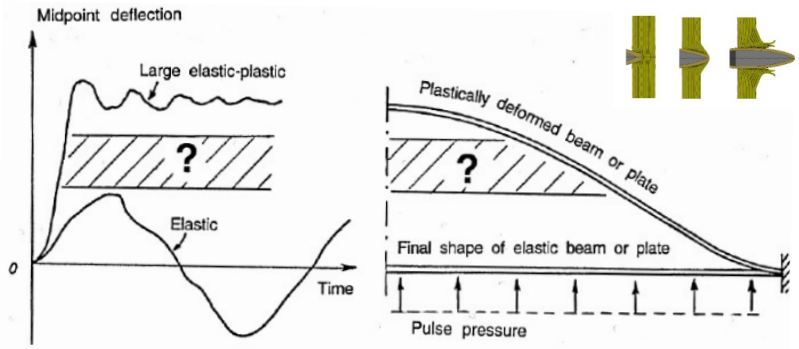
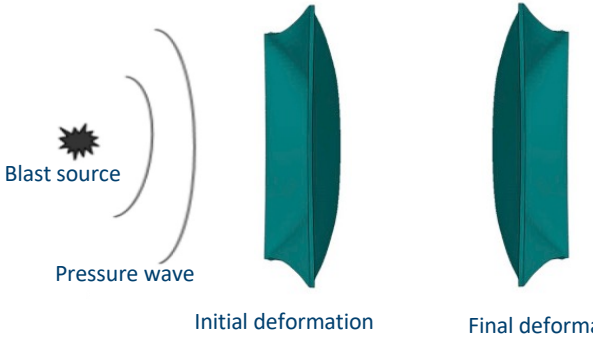
Structural integrity under extreme loads

Topic: High fidelity models of blast loading

TITLE: Counter-intuitive behaviour (CIB) of blast loaded plates

RESEARCH BACKGROUND:
Blast waves are a strongly nonlinear loading condition. Such phenomenon leads to results which are counter intuitive. Under certain conditions, final deflections of plate is contrary to the direction of the blast loading. This phenomenon is called reverse buckling and further investigations are needed to assess the influence of different parameters governing it.



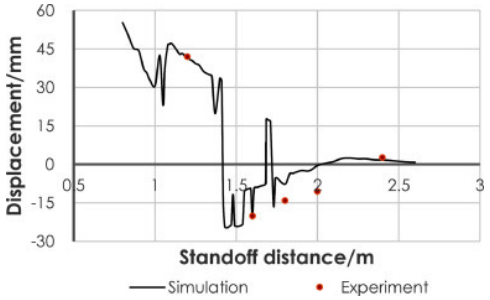


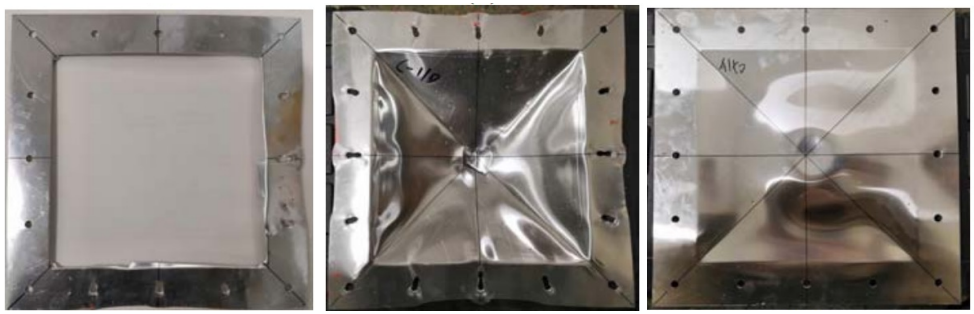
RESEARCH ACTIVITIES:
1. Literature review on counter intuitive behaviour (CIB) on plates.
2. Numerical simulation of metal plates under blast loading.
3. Numerical simulation of composite plates under blast loading.
4. Sensitivity analysis of relevant parameters that determine CIB.

METHODOLOGY: Analytical-Numerical

DURATION: 6-9 months

CONTACTS:
andrea.manes@polimi.it
marco.giglio@polimi.it





Shear failure at boundaries | Large plastic deformation | Counter intuitive behaviour