

Description

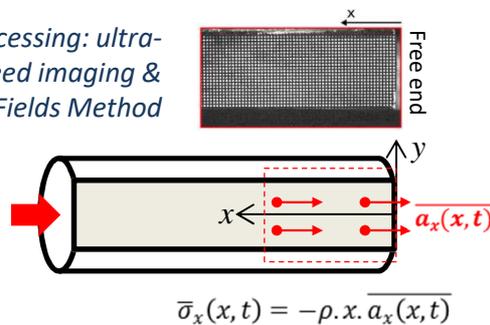
This experimental platform is dedicated to the characterization of the mechanical behaviour of any types of materials (concrete, High-strength concrete, rocks, ceramics, composites, polymers) and their damage modes under high-strain-rates loading and impact loading. This characterization is essential for the development of constitutive laws and micro-mechanics based models

Dynamic testing applied to geomaterials (concretes, mortars, rocks, ice...)

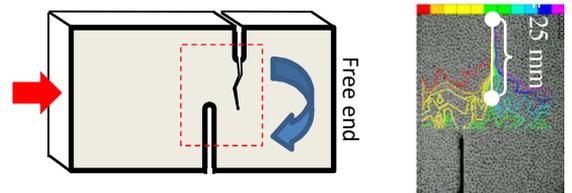
Dynamic tensile tests by the spall technique
Range of strain-rates: 20-200/s



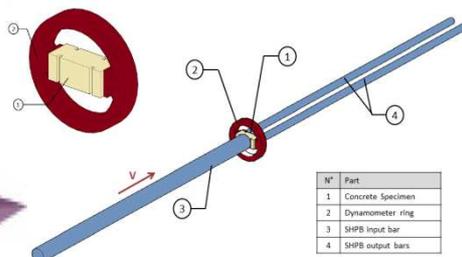
Data processing: ultra-high speed imaging & Virtual Fields Method



« Rockspall » technique to characterise the crack speed in geomaterials



Dynamic punch-through shear tests conducted with a Split Hopkinson Pressure Bar apparatus. Strain-rates: 10-100/s, Normal stress: up to 60 MPa

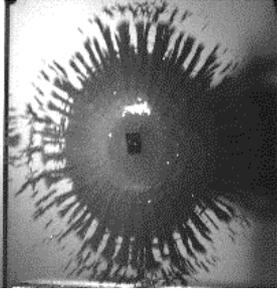


ExperDYN Platform

Dynamic experimentations to characterize the behaviour of materials at high-strain-rates



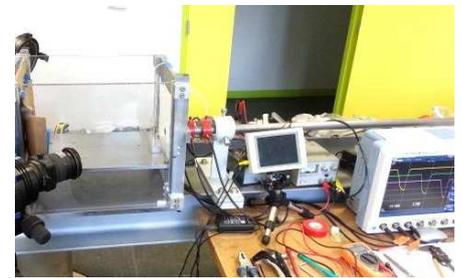
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Impact testing of materials and structures

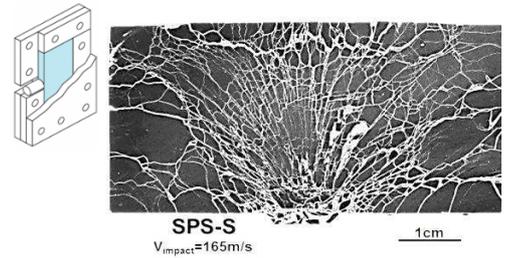
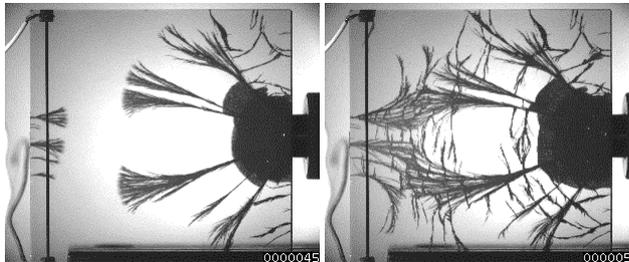
ExperDYN testing platform hosts 3 gas-launchers dedicated to the testing of ceramic, concrete, composite and polymeric structures. The purpose is to better understand the relationship between the microstructure of the tested materials, their mechanical behaviour and the underlying damage mechanisms as well as to validate the numerical simulation tools.

20 and 50-mm-caliber gas launchers for Edge-On Impact (EOI), Normal and Tandem impact tests (V_{impact} : 10-300 m/s)



EOI in open configuration: analysis of fragmentation process with an ultra-high speed camera

Sarcophagus configuration: post-mortem analysis of fragmentation



Multi-calibre gas launcher for plate-impact experiments under vacuum (V_{impact} : 10-1100 m/s)

Dynamic testing at very-high loading-rates (isentropic compression, Shockless spalling)

*Calibres: 25, 80, 100, 120 mm
Vacuum: 100 μ bars*

