Installation technique et scientifique

ExperDYN testing platform: Hopkinson Pressure Bars

Dynamic testing of materials at high-strain-rates

Scientific manager: **Pr. Pascal FORQUIN**
(pascal.forquin@univ-grenoble-alpes.fr)

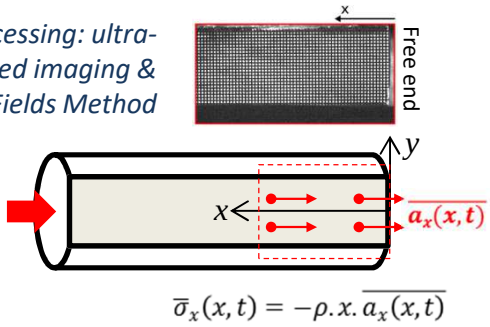
Description

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…)

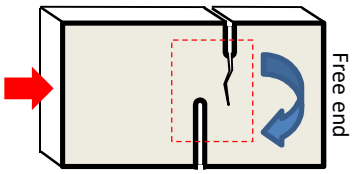
Dynamic tensile tests by the spall technique
Range of strain-rates: 20-200/s

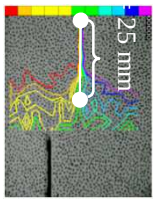
Data processing: ultra-high speed imaging & Virtual Fields Method



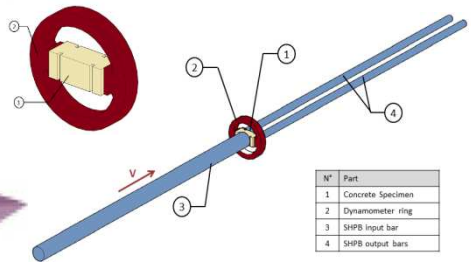
$$\overline{\sigma}_x(x,t) = -\rho.x.\overline{a_x(x,t)}$$

« 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



N°	Part
1	Concrete Specimen
2	Dynamometer ring
3	SHPB input bar
4	SHPB output bars

Active confinement

Passive confinement

Laboratoire Sols, Solides, Structures, Risques
Domaine Universitaire, 1270 rue de la piscine, Saint Martin d'Hères, 38400
www.3sr-grenoble.fr