

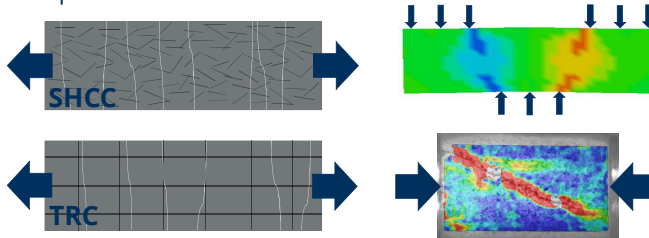
Ali A. HERAVI – Doctoral Project A4/I

MECHANICAL CHARACTERIZATION OF STRAIN-HARDENING CEMENT-BASED COMPOSITES UNDER IMPACT LOADING

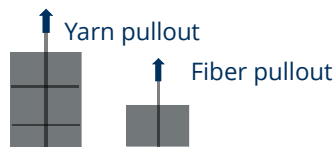
1 OBJECTIVES

- Characterizing the strengthening composites
- Explaining the rate-sensitive behavior of the composites
- Developing test setups for impact loading
- Considering composite features in the setup design

Composite level

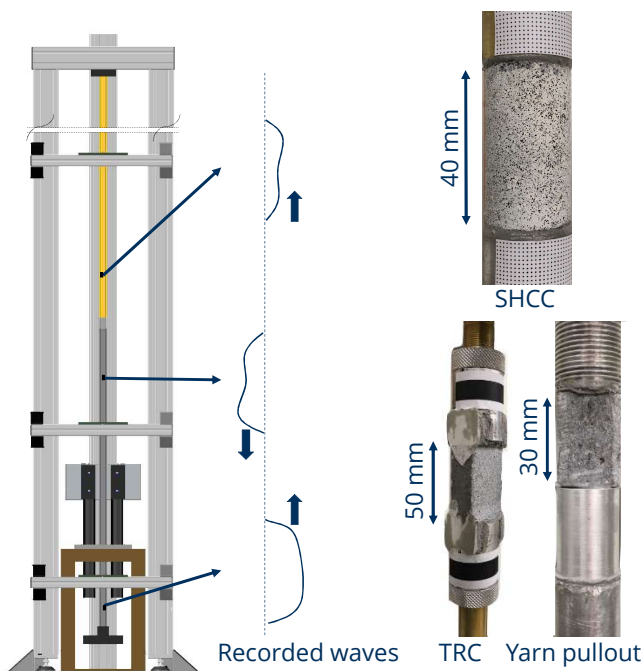


Constituent level



2 METHODS

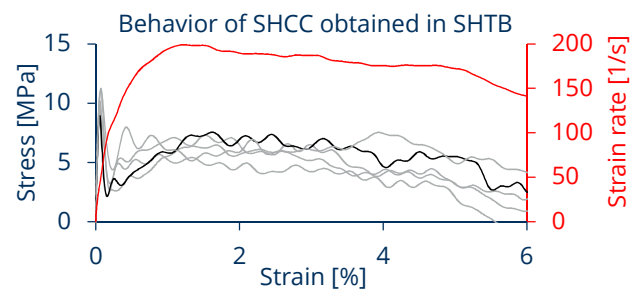
- Split Hopkinson Tension Bar (SHTB)
- Principle of one-dimensional wave propagation
- Optical measurement and Digital Image Correlation
- Analytical and numerical modelling



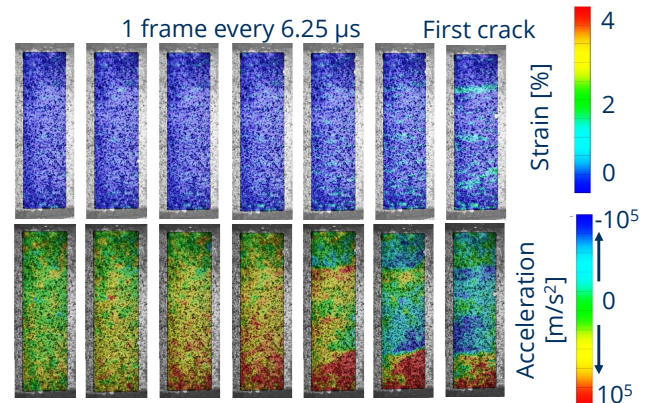
Schematic view of the gravity-driven SHTB

3 RESULTS

- Setups for impact tensile test on SHCC and TRC
- Characterizing SHCC and TRC under impact tensile load
- Constituent-level tests, i.e., fiber pullout and yarn pullout, to explain the composite behavior



- Explaining fracture mechanism and influence of inertia



- Investigating the behavior of SHCC under impact compression and shear loading

4 COLLABORATIONS

- T. GONG (A3/I): TRC under impact tensile load
GONG et al. App. Sci. (2019)
- A. FUCHS (B3/I): modelling wave propagation in planar samples
HERAVI et al. Cem. Concr. Comp. (2020)
- O. MOSIG: SHCC under impact compression load
HERAVI et al. Materials (2020)
- I. CUROSU (Postdoc): SHCC under impact tensile load
HERAVI et al. Cem. Concr. Comp. (2019)
- F. LIEBOLD (C1/I): measuring crack propagation velocity
LIEBOLD et al. Materials (2020)
- A. TAWFIK (A4/II): knowledge transfer and developing a setup for impact shear tests
HERAVI et al. Materials (2020)