

Ahmed TAWFIK – Doctoral Project A4/II

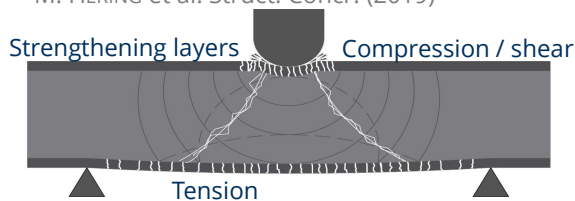
CHARACTERIZATION OF THE SHEAR RESISTANCE OF MINERAL-BONDED COMPOSITES UNDER IMPACT LOADING

1 STATE OF THE ART

- Knowledge of characteristics of mineral-bonded composites under tensile loading was obtained, but not yet under shear loading
- Current shear test setups cannot be directly applied to investigate the shear resistance of mineral-bonded composites

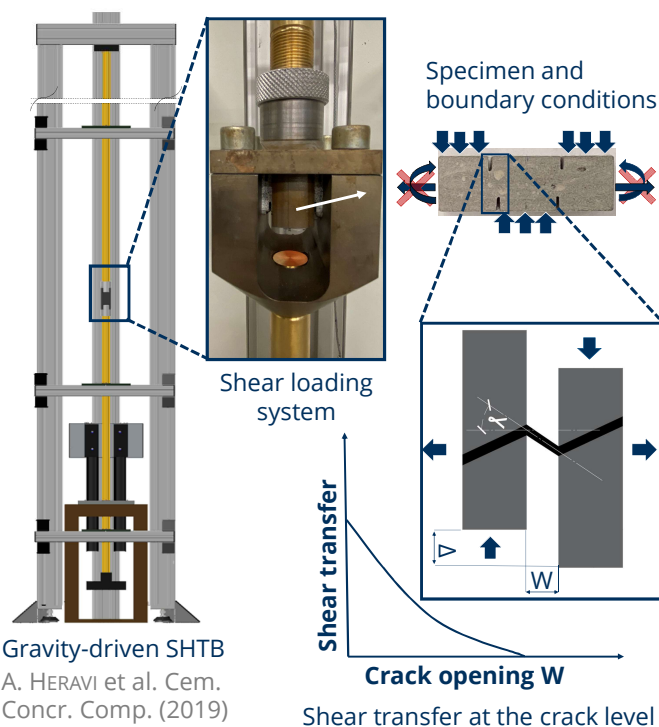


Non-strengthened RC plate after impact
M. HERING et al. Struct. Concr. (2019)



2 OBJECTIVES

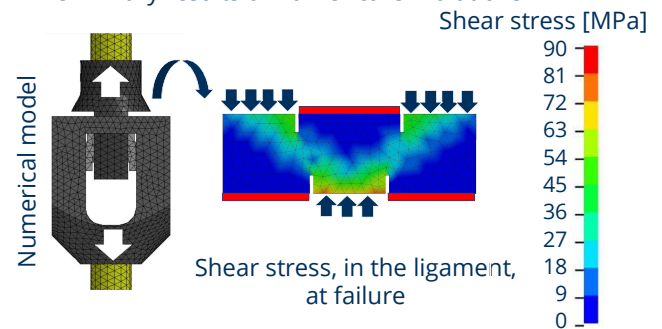
- Developing appropriate testing facilities and methodologies for appropriate shear characterization at different levels of observation
- Improved shear resistance by 3D-wire reinforcement



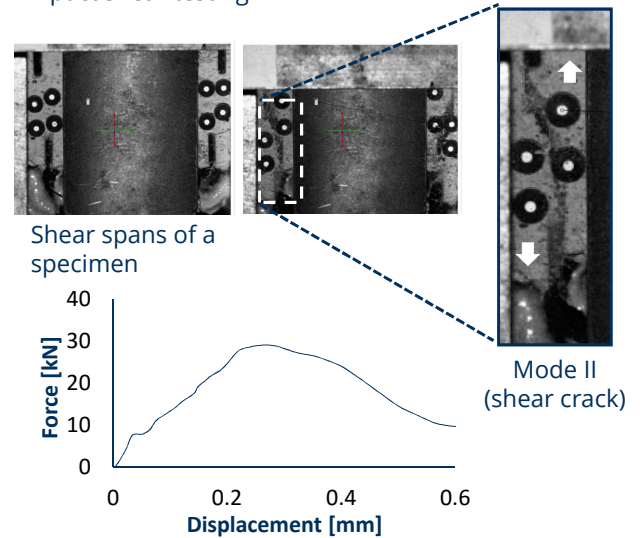
Gravity-driven SHTB
A. HERAVI et al. Cem. Concr. Comp. (2019)

3 RESULTS

- Preliminary results of numerical simulations



- Impact shear testing



4 PLANNED COLLABORATIONS

- H. LE XUAN (A1/II) - applying 3D reinforcement for enhanced shear resistance
- M. BEIGH (A3/II) - material properties of mineral-bonded composites
- H. KNOBLOCH (B1/II) - shear failure simulations at the meso-scale
- J. STÖCKER (B3/II) - material behavior at the meso-level for modelling of SHCC and hybrid reinforced concrete
- F. BRACKLOW (A5/II) - material properties of mineral bonded composites for structural level testing
- L. LEICHT (A6/II) - material properties from small-scale experiments for developing damping layers
- F. CONRAD (C3/II) - data driven methods for material development and structural strengthening

