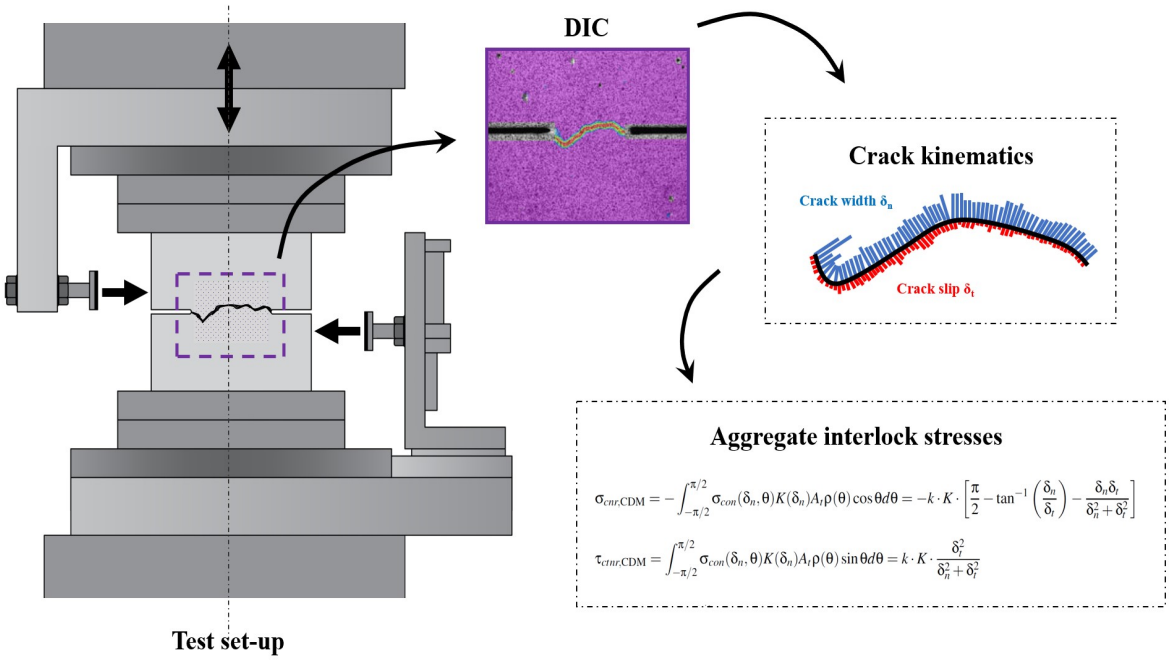
Crack-based Assessment of Reinforced Concrete

- **Project category:** GC
- **Project type:** Laboratory Project
- **Project supervisors:** Prof. David Ruggiero (validate the project), and Elias Merhi



- **Description:**
  As the majority of post-war reinforced concrete infrastructure reaches the end of its service life, an immediate and crucial need arises to assess and evaluate existing structures. Recent research has illustrated the potential of concrete-mechanics-based assessment methods, specifically highlighting the accuracy of using crack kinematics for estimates.
  In this project, you will participate in a series of tests on doubly-notched concrete elements subjected to various ratios of axial loads and shear forces. By incorporating Digital Image Correlation (DIC) technology, these tests are designed to precisely capture the geometry and movement of forming cracks. The primary objective of these experiments is to derive a set of crack input parameters that can be subsequently used to determine stresses on both the crack surface and within the concrete element itself.
- **Keywords:** Doubly-notched elements, DIC, Crack kinematics, Crack-based assessment, Aggregate interlock.

  To register for the project please send an email with your names to: elias.merhi@epfl.ch