MS5-4: Computational methods for damage and fracture

Organisers : Nicolas Moes (Centrale Nantes, France) and Jean-François Molinari (EPFL, Switzerland)

This mini-symposium is dedicated to recent advances in computational methods for damage and fracture mechanics. Numerical contributions establishing bridges with theoretical and experimental advances are also welcomed. The mini-symposium is intended to provide a forum of discussion between interdisciplinary groups of researchers and to promote a fruitful exchange of ideas and information amongst engineers, applied mathematicians, and physicists, bridging the gap between fully physics-based and DD numerical approaches.

In particular, contributions on the following topics are welcomed:

- Data-driven machine learning methods;
- Nonlocal and enhanced damage models;
- Phase-field formulations;
- Lip-field approach;
- Multiscale approaches to bridge microstructural failure mechanisms to macroscopic non local models;
- Discrete approaches for fracture mechanics, including cohesive approach;
- Coupling of damage with other dissipative mechanisms in traditional and innovative materials;
- Advances in damage modeling accounting for anisotropic, cyclic or dynamical behaviors;
- Instability phenomena in damage models;
- Multiphysics damage processes in porous materials;
- Damage and damage tolerance in metamaterials;
- Robust numerical methods for complex structural damage analyses up to failure.