MULTISCALE METHODS FOR FRACTURE AND DAMAGE IN HETEROGENEOUS MATERIALS

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ABSTRACT

Fracture and damage processes in heterogeneous materials span different length and/or time scales, hence understanding the link between relevant properties at a macroscale and phenomena occurring at lower scales is essential for design and development purposes. This minisymposium is meant as a venue to communicate the latest developments in multiscale fracture and damage mechanics, with special emphasis on the distinct computational aspects required for scale transitions. Interested participants are invited to submit their contributions on topics that include, but are not limited to:

- Multiscale methods for discrete computational fracture mechanics

- Continuum/distributed damage multiscale methods

- Probabilistic/statistical methods linking microscale defects and macroscopic failure

- Efficient solution algorithms for multiscale damage and fracture

- Multiscale phase field modelling of damage and fracture

- Numerical homogenization of constitutive models for damage/fracture

- Temporal multiscale methods for dynamic crack propagation and fatigue

The focus of the minisymposium is on computational methods, but experimental and/or analytical results are encouraged if they enable verification or validation of the multiscale aspects of the numerical methods.