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CONTINUOUS-DISCONTINUOUS COMPUTATIONAL MODELS FOR FRACTURE

ELENA BENVENUTI[*], ANTONIO RODRÍGUEZ-FERRAN[†] AND GUGLIELMO SCOVAZZI [‡]

[*] Engineering Department, University of Ferrara, via Saragat 1, Ferrara, Italy
Email:elena.benvenuti@unife.it, URL: https://docente.unife.it/elena.benvenuti

[†] Laboratori de Càlcul Numèric (LaCàN), Universitat Politècnica de Catalunya, 08034 Barcelona, Spain E-mail: antonio.rodriguez-ferran@upc.edu , URL: www.lacan.upc.edu/user/antonio-rodriguez-ferran/

[‡]Civil and Environmental Engineering Department, Duke University, Durham, NC27798, USA
Email: guglielmo.scovazzi@duke.edu, URL: https://cee.duke.edu/faculty/guglielmo-scovazzi

ABSTRACT

We would like to gather researchers active in the computational mechanics community and interested in modelling static and dynamic phenomena involving fracture, strain localization, interfacial failure, as well as any kind of discontinuities and singularities of the primal fields. Typical examples come, for instance, from fracture development and failure of structural components, rocks, composite materials, metamaterials and biomaterials, as well as from delamination and debonding issues, wave propagation across discontinuities, metal forming processes, health monitoring and many others. In all these circumstances, computational models face the challenge of properly capturing the transitioning of the primal fields from a continuous to a discontinuous regime and the possible emergence of singularities into the governing equations. A non-exhaustive list of the relevant methods includes:

Generalized and eXtended FEM.
Nonlocal models.
Mesh-adaptive approaches
Mesh-free methods.
Discontinuous Galerkin approaches.
Level set methods.
Phase-field models.
Peridynamics.
Shifted crack models.
Crack tracking algorithm.
Smeared crack models.
Cohesive zone models.
Advanced relevant discretization methods.

In general, any contributions combining the aforementioned methods or pertaining to the broad topic of computational modelling of continuous/discontinuous phenomena are welcome.