



TOR VERGATA
UNIVERSITY OF ROME



Department of Civil Engineering and Computer Science

PhD program in Civil Engineering

Quasi brittle damage modelling: local and non local approaches, variational formulation

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Université Pierre et Marie Curie - Sorbonne Université, Faculté des Sciences - Institut Jean le Rond d'Alembert - Paris

The aim is to apply, on the first, the Generalized Standard Materials framework to formulate local damage models of quasi brittle solids (lectures 1 and 3). A support to this formulation will be traced by providing some appropriate results of micromechanics (lecture 2). Lecture 4 will be devoted to the presentation of gradient damage models for which the required variational formulation is also introduced.

COURSE PROGRAM

Friday, 7 June 2019, 16h00 - 18h00

Lecture 1: Basic principles of damage mechanics

Physical mechanisms and characterization techniques. Formulation of the coupling between elasticity and isotropic damage.

Monday, 10 June 2019, 16h00 - 18h00

Lecture 2: Effective properties of micro-cracked elastic media

Eshelby-based approach of solids containing penny-shaped microcracks. Effective elastic properties. Case of a randomly oriented set of microcracks.

Monday, 17 June 2019, 16h00 - 18h00

Lecture 3: Elastic damage with unilateral effects

Context and motivation of unilateral damage due to micro cracks closure. Formulation of the elastic damage model with unilateral effects. Applications.

Monday, 24 June 2019, 16h00 - 18h00

Lecture 4: Gradient damage models and variational formulation

Thermodynamics of gradient damage models. Evolution equations. Variational formulation of gradients damage models and interpretation.

COURSE LOCATION

meeting room, 2nd floor side A, building *Civil Engineering*
University of Rome Tor Vergata - via del Politecnico 1, 00133 Rome

Reference contact

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