TOR VERGATA
UNIVERSITY OF ROME

Department of Civil Engineering and Computer Science
PhD program in Civil Engineering

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Damage and Collisions

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A mechanical structure can be damaged suddenly, for instance by a collision or an explosion. It can be smoothly and progressively damaged by mechanical or chemical actions. We address the two problems considering a simple structure: a beam.

1. Smooth motion and damage. We derive the theory based on the principle of virtual power and on convenient constitutive laws.
2. Non smooth motion. Collisions. The beam is collided by a heavy steel ball. We build a theory to predict the motion after the collision, i.e., to compute the velocity field of the beam after the collision. The equations result from the principle of virtual work, the definition of convenient percussions (i.e., internal forces) and the derivations of constitutive laws.

Only basic continuum mechanics notions are needed to follow the mini-course which is intended to be interactive. Numerical applications are possible.

COURSE PROGRAM

Friday, 14 February 2020, 15h00 - 16h00
Monday, 17 February 2020, 11h00 - 12h00
Tuesday, 18 February 2020, 15h00 - 16h00
Wensday, 19 February 2020, 15h00 - 16h00
Thursday, 20 February 2020, 15h00 - 16h00

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

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