

INVITATION TO THE LECTURE

MAY 25, 2021

9:30

ONLINE IN MS TEAMS

MODELLING PROCESSES IN POROUS MEDIA: FROM MICRO- TO MACRO-SCALE AND THE EULERIAN AND LAGRANGIAN APPROACHES TO POROELASTICITY UNDER SMALL STRAINS

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At the beginning of the talk, the micro- and macro-scales of a porous medium will be presented and it will be sketched how one can pass from the former to the latter one. Then the description of the porous medium deformation at the macro-scale will be shortly introduced. The Eulerian and Lagrangian forms of the balance equations will be derived and they will be completed by constitutive relationships. The small perturbation assumption will be introduced and final governing equations of isothermal saturated poroelasticity will be established both from the Eulerian and Lagrangian equations. Potential updates of the initial states in successive time steps in the case of time discretisation will be proposed. Finally, the Eulerian and Lagrangian approaches to the model under consideration will be discussed.