LMPS

Alessandro TENGATTINI

02 MAY

🕐 **13h30 to 15h00**
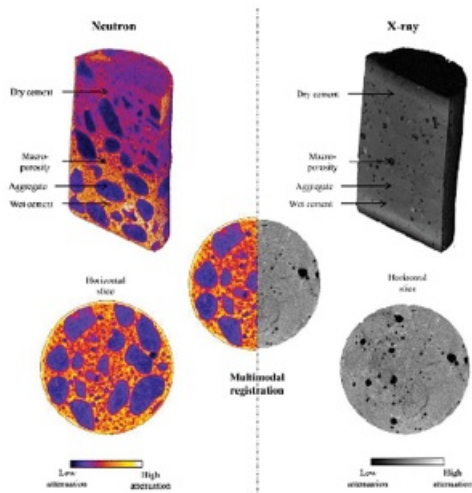📍 Centrale Supélec, Room Amphithéâtre sc.046 (Peugeot), Bouygues

Seminar : Alessandro Tengattini

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📅 **ADD TO THE CALENDAR**

Simultaneous neutron and X-ray tomography to explore coupled processes in porous media

Example of the unique complementarity of information provided by neutrons and X-rays in the study of concrete.

Porous media are a broad class of naturally occurring and engineered materials, ranging from concrete to food material and from rocks to bio-materials. In common they share a complex microstructure and a tendency to undergo coupled hydro-chemo-termo-mechanical processes. Historically X-ray imaging has been the main approach to study their response in full-field, but in a growing number of cases neutron imaging has proven equally essential to study processes, e.g., to explore the role played by hydrogen-rich substances, such as water, and salts within them. Recent developments have significantly pushed the spatio-temporal resolution of neutron imaging as well as allowed for the acquisition of truly simultaneous neutron and x-ray tomographies. Their combined use is uniquely powerful, thanks to the high complementarity of their contrast. It allows not only to study different aspects of processes (e.g., the interdependence between the opening of cracks and water penetration) but even aids in the identification of the different phases comprising a sample as highlighted in Fig. 1

This contribution will propose an overview of recent developments in neutron imaging including the combined use of x-ray imaging, and advanced neutron techniques (grating interferometry, polarized neutron imaging) focusing on recent discoveries allowed by- and new venues opened in- the study of porous media. It will also detail the new venues opened thanks to the recently achieved major upgrade of the instrument NeXT-Grenoble.