

## **2<sup>nd</sup> Workshop « 3D Microtexture analysis »**

*LEM3 - Labex DAMAS  
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### **Micromechanical Analysis of Stress-Strain Inhomogeneities with Fourier transforms (MASSIF)**

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This presentation explains the package called Micromechanical Analysis of Stress-Strain Inhomogeneities with Fourier transforms (MASSIF), more commonly referred to as the FFT method. Emerging characterization methods in experimental mechanics pose a challenge to modelers to devise efficient formulations that permit interpretation and exploitation of the large images and massive amount of data generated by these novel methods. We explain a numerical formulation based on fast Fourier transforms, developed over the last 15 years, which can use the voxelized microstructural images of heterogeneous materials as direct input to predict their micromechanical and effective response. The focus is on applications of the method to plastically-deforming polycrystalline materials. The FFT package is a simulation tool and while significantly faster than Finite Element, is not practical to run in real-time during the tutorial. The tutorial will cover how to set up simulations and visualize the results. The tutorial will focus on the sensitivities and subtleties of the tool. It is not necessary for the attendees to obtain the FFT package prior to the workshop to participate in the tutorial.