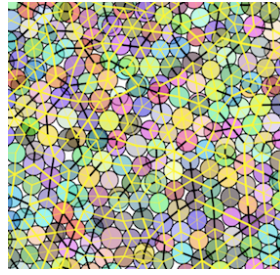


Disorder in Complex Systems



ID de Contribution: 7

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Statics and Dynamics of Disordered Elastic Systems

mercredi 8 juin 2022 14:00 (1h 30m)

The theoretical framework of disordered elastic systems has been successfully applied, over the last decades, to a wide range of physical systems with very different microphysics and characteristic scales. These range for instance from ferroic domain walls, vortices in superconductors, biophysics interfaces to fracture cracks and earthquakes. Experimentally, this framework provides effective descriptions at a mesoscopic scale, theoretically tractable and experimentally testable. From a fundamental point of view, it encompasses prototypical models of classical statistical physics, where the role of disorder can be systematically investigated, while triggering the development of new theoretical tools to tackle out-of-equilibrium issues.

This lecture will be an introduction to the statics and dynamics of these systems, both from theoretical and experimental perspectives. We will in particular focus on the dynamical critical phenomena they exhibit in response to external forces –such as the depinning transition and the response to small forces (creep)– and on the analogy drawn with other driven complex systems, such as shear amorphous materials and their corresponding ‘yielding’ transition.

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