



Mechanical Engineering Seminar Series and MICDE Seminar Series

Continuum mechanics of non-equilibrium phenomena: a journey through space and time scales

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[ME Seminar Zoom link](#) (QR Code below)

Password 121814



Abstract

The fascinating diversity of material behavior at the macroscopic scale can only emerge from the underlying atomistic or particle behavior. Yet, the direct connection between these two scales remains an extremely challenging quest, particularly in the context of non-equilibrium phenomena. In this talk, we will discuss several advances in this direction, in the context of plasticity, thermoelasticity, diffusion and viscous dissipation. In all these cases, the importance of fluctuations in the effective response will become apparent. More precisely, these will provide crucial information for the material description and evolution at the continuum scale, where the behavior is modeled as deterministic and free of fluctuations.

Bio

Celia Reina is the William K. Gemmill Term Assistant Professor in Mechanical Engineering and Applied Mechanics at the University of Pennsylvania. She joined in 2014 after holding the Lawrence Postdoctoral Fellowship at Lawrence Livermore National Laboratory and the HCM postdoctoral Fellowship at the Hausdorff Center of Mathematics in Bonn, Germany. Dr. Reina received her PhD from the California Institute of Technology in Aerospace Engineering in 2011, under the supervision of Prof. Michael Ortiz, following a B.S. in Mechanical Engineering from the University of Seville in Spain, and a Master in Structural Dynamics from Ecole Centrale Paris in France. She is the 2017 recipient of the Eshelby Mechanics Award for Young Faculty, she is a member of the TTA on Nanotechnology and Lower Scale Phenomena at the USACM, and she currently serves as the recording secretary for the Applied Mechanics Division of the ASME.

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