PHYSICAL MATH SEMINAR

Modeling the rheology of biological tissue



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ABSTRACT:

The mechanical properties of biological tissues are important in processes such as embryo development, wound healing and tumour invasion. Processes such as these spontaneously generate stresses within tissues via active process at the single cell level. Tissues are also subject to external stresses and strains from surrounding tissues and organs. The success of numerous physiological functions relies on the ability of tissues to withstand stress under some conditions, yet to flow under others. Biological tissue is furthermore inherently viscoelastic, with a slow, time-dependent stress relaxation. Despite this rich phenomenology, the mechanisms that govern the transmission of stress within biological tissue, and its response to bulk deformation, remain poorly understood. This talk will survey recent research modelling the mechanical properties of biological tissue, discussing diverse rheological phenomena including strain-induced stiffening, yielding, shear thinning and/or thickening, and shear banding.

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2:30 PM – 3:30 PM

Building 2, Room 449

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