

IDO REGEV - THEORETICAL SOFT MATTER PHYSICS

Topics

Physics of glasses and granular materials

Pattern formation and biomechanics in developmental biology

Drying and cracking of soft and granular materials

Tools

Classical statistical mechanics and condensed matter physics

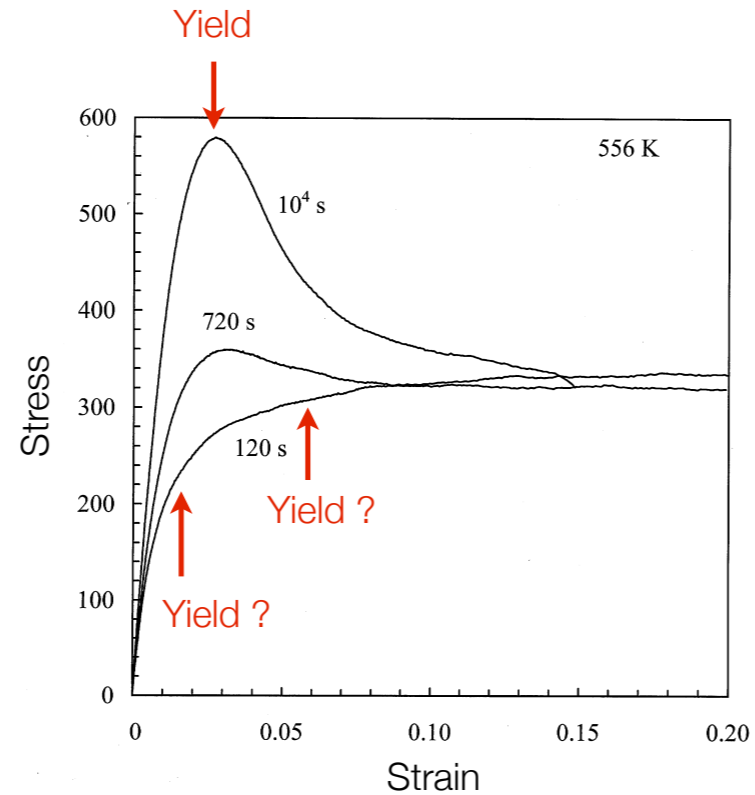
Nonlinear dynamics and chaos

Continuum mechanics

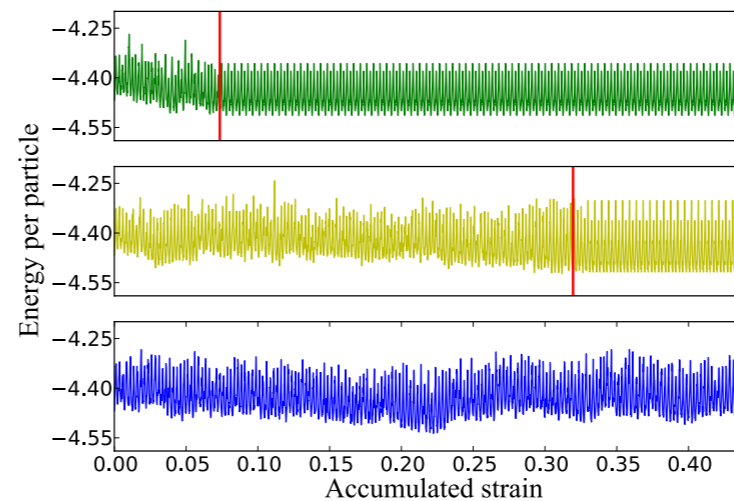
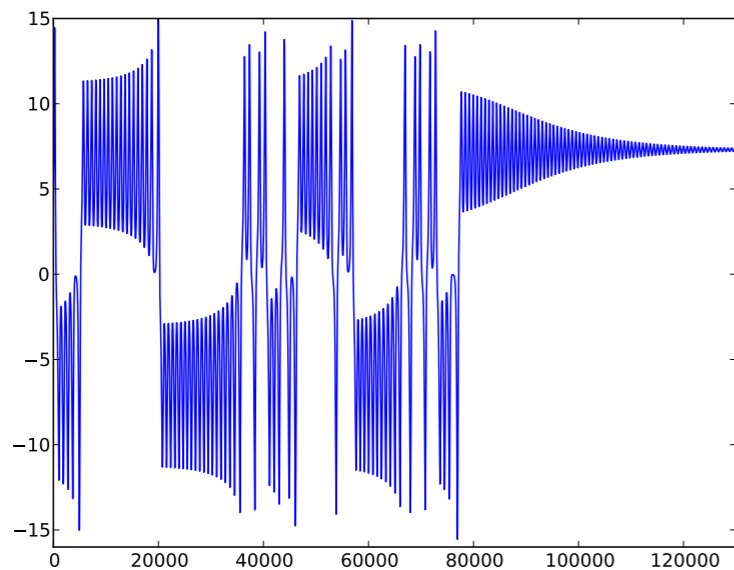
Various Numerical Methods

AMORPHOUS MATERIALS UNDER PLASTIC DEFORMATION

How does an amorphous solid yield?

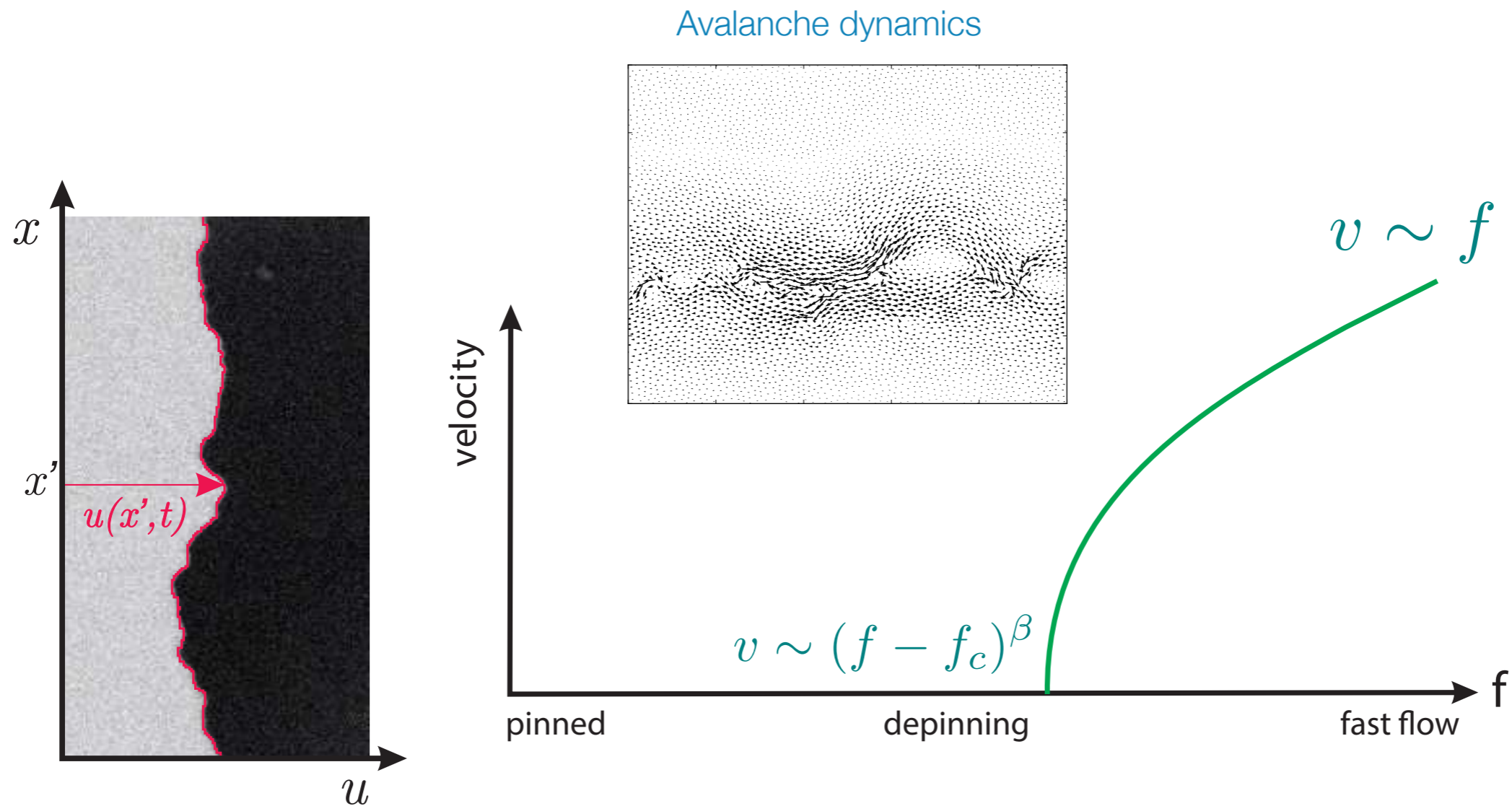


Transition to chaos

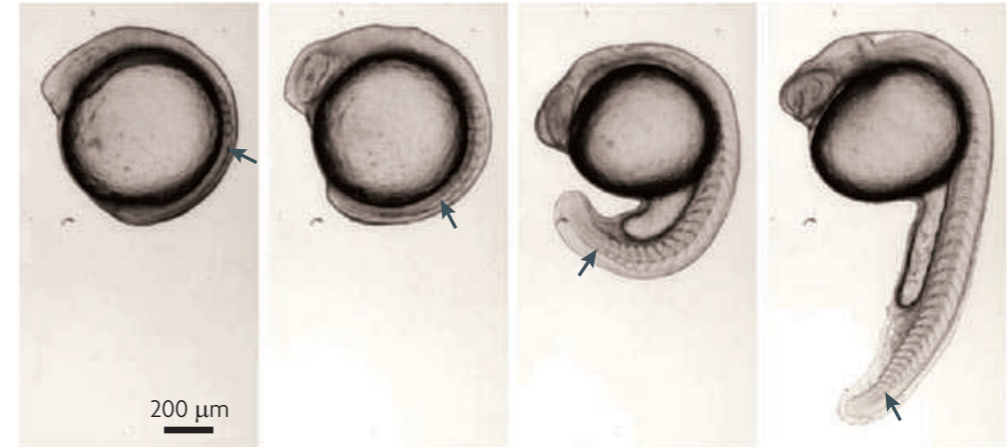


AMORPHOUS MATERIALS UNDER PLASTIC DEFORMATION

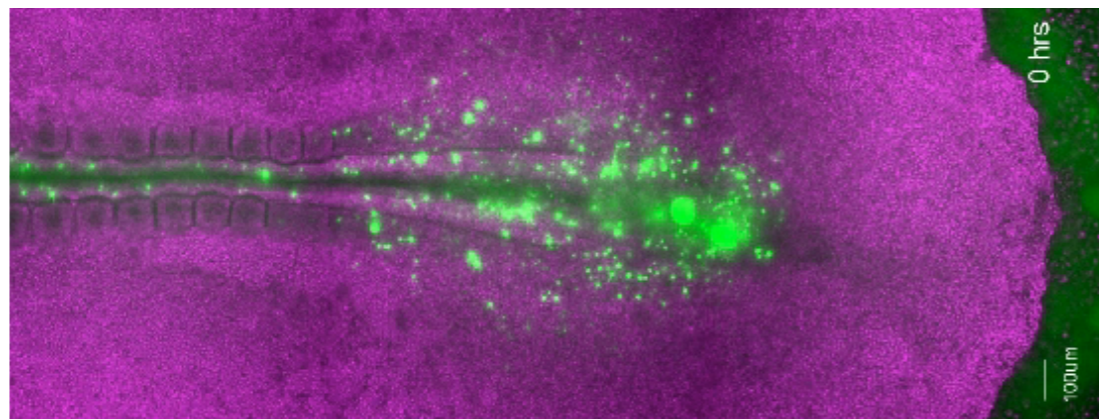
Non-equilibrium critical point



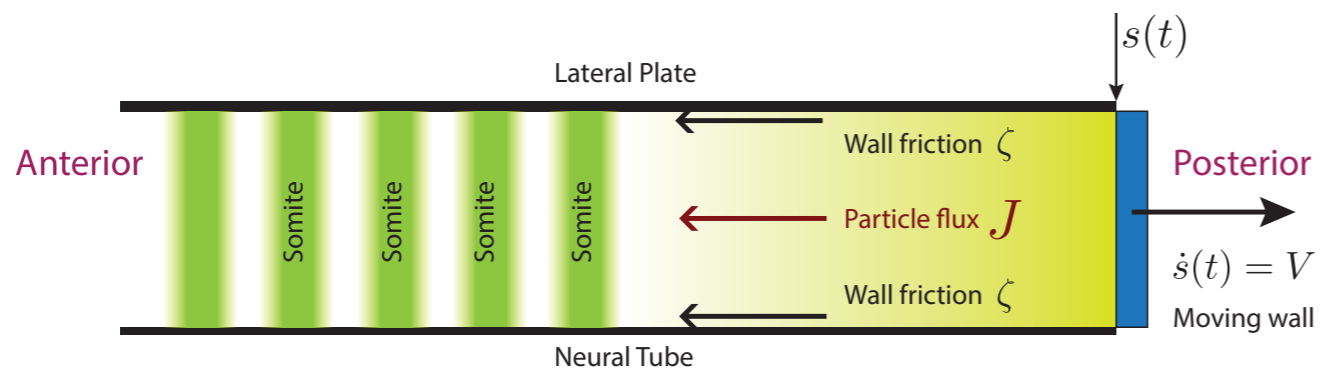
DEVELOPMENTAL BIOLOGY



Elongation due to Cellular diffusion



Nonlinear gene expression waves prescribe vertebra sizes

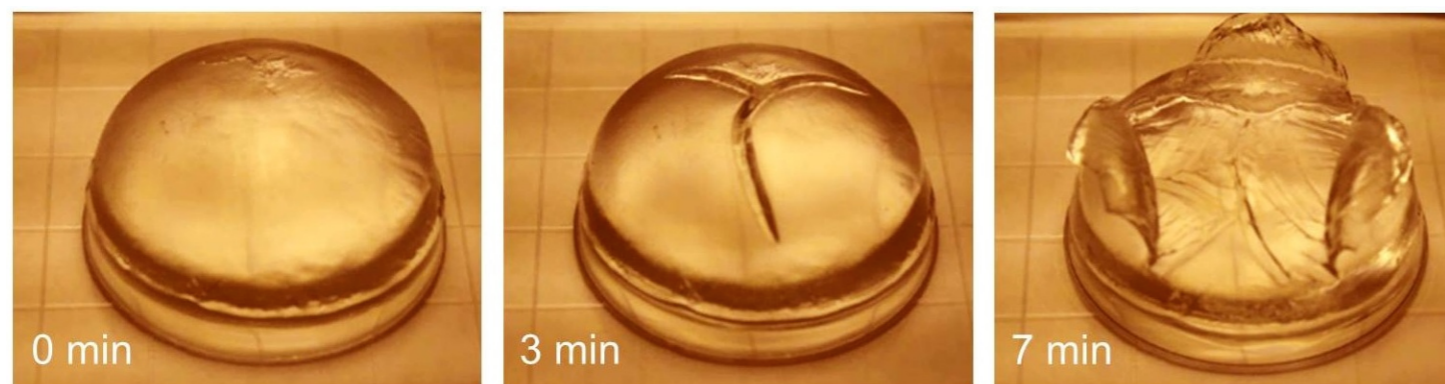


DRYING AND CRACKING

Drying causes volume gradients



Volume gradients cause compatibility strains
- causes fracture and peeling



Emerging length-scale (not from internal structure)

Strain compatibility

