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Fracture across fields: insights from materials science, biology, and geophysics

May 8-10, 2024
Room 407, Jadwin Hall

Organizers
John Kolinski
Andrej Košmrlj
Ching-Yao Lai
Reza Moini
Abigail Plummer

This workshop is supported in part by CEE, PCCM, PMI, SEAS, MAE, Physics
Fracture across fields
Wednesday, May 8, 2024
8:00-9:00  Light Breakfast
9:00-9:10:  Opening remarks

9:10-09:50  **K. Ravi-Chandar**
Fracture in soft materials

9:50-10:30  **Zdeněk Bažant**
Reformulation of fracture mechanics from nano to macro in consequence of the gap test

10:30-11:00: Coffee break

11:00-11:40: **Nadia Lapusta**
Talk title TBA

11:40-12:20: **Alice Gabriel**
Fault-size dependent fracture energy explains rupture dynamics of cascading earthquakes in multiscale fracture networks

12:20-2:00: Lunch Break

2:00-2:40  **Kristin Myers**
Soft Tissue Mechanics in Pregnancy

2:40-3:20  **Luka Pocivavsek**
Aortic Morphogenesis: Tracking Shape Evolution from Normal Growth to Pathology

3:20-3:50  Coffee break

3:50-4:30  **Marcus Buehler**
Physics-aware generative artificial intelligence to predict fracture dynamics and solve inverse problems

4:30-5:10  **Somdatta Goswami**
Deep operator learning for fracture analysis.

5:10 – 7:00  Poster Session and Reception for everyone at PCTS

Fracture across fields
Thursday, May 9, 2024
8:30-9:00  Light Breakfast

9:00-9:40:  **Vikram Deshpande**
Some interesting fracture phenomena: from architected solids to solid state-batteries.

9:40-10:20:  **Tal Cohen**
Exploring fracture morphologies in soft solids: theory and experiments

10:20-10:50: Coffee break

10:50-11:30: **Guillaume Charras**
Rupture strength of living cell sheets

11:30-12:10: **Moumita Das**
Robustness and fracture-resistance of composite biopolymer networks in cells and tissues

12:10-1:20  Lunch Break

1:20-2:00  **Irmgard Bischofberger**
Crack morphology in drying colloidal suspension drops'

2:00-2:40  **Mokhtar Adda-Bedia**
Nonlinear elastic fracture Mechanics

2:40-3:20  **Gianluca Cusatis**
Discrete Modeling of Fracture in Quasi-Brittle Infrastructure Materials

3:20-4:00  Coffee break

4:00-5:00  **Camilla Cattania**
Physics Colloquium at PCTS
Fracture insights into earthquake behavior
Fracture across fields
Friday, May 10, 2024

8:30-9:00  Light Breakfast

9:00-9:40:  **Brian Camley**
Dissociation of clumps of cells in collective cancer invasion

9:40-10:20:  **Vivek Prakash**
Motility induced fractures in a simple marine animal's epithelia

10:20-10:50:  Coffee break

10:50-11:30:  **Will Steinhardt**
The Rules of Fracture Roughness and Fully Confined Rubber Earthquakes: How Heterogeneity Drives Observable Behaviors and How We Can Study It

11:30-12:10:  **Lucas Zoet**
The role of fractures in shaping glacial landscapes

12:10  Lunch and Departure