

Mechanical Instabilities in Solids and Fluids

Scientific program and social events

Monday Oct. 16

8:30-9:30 Registration and refreshments

9:30-9:45 Opening remarks: Prof. Eran Sharon

9:45-10:00 Greetings: Prof. Michal Linial, IIAS Director

Session 1: Pattern formation and self-organization I – Chair: E. Brener

10:00-10:45 H. Swinney: "Patterns and waves in rotating and stratified fluids"

10:45-11:15 B. Meerson: "Large fluctuations in non-equilibrium macroscopic systems:
Lattice gases, surface growth and reaction fronts"

11:15-11:45 Coffee break

11:45-12:15 E. Moses: "The structure of a brain: Percolation in space and oscillations in time"

12:15-12:45 D. Kessler: "Nonlinear self-adapting wave patterns"

12:45-14:00 Lunch break (Fabiano Cafeteria)

Session 2: Pattern formation and self-organization II – Chair: Y. Shokef

14:00-14:45 Y. Couder: "A wave-field as an information repository"

14:45- 15:15 L. Friedland: "Pattern formation by adiabatic synchronization"

15:15-15:45 Coffee break

15:45-16:30 D. Lathrop: "Electromagnetic phenomena in granular flows in the laboratory and
dusty plasmas in geophysics and astrophysics"

16:30-17:00 Y. Meroz: "Uncovering Organismal Memory Phenomena: From Cellular
Chemotaxis to Plant Tropisms"

17:00-17:30 S. Ciliberto: "A protocol for reaching equilibrium arbitrary fast"

17:30-19:00 Poster session and refreshments



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Tuesday Oct 17

8:30-9:00 Gathering and coffee

Session 3: Instabilities in fluids – Chair: T. Schneider

9:00-9:45 V. Steinberg: "Search for direct relation between elastic turbulence and turbulent drag reduction"

9:45-10:15 L. Tuckerman: "Exotic patterns of Faraday waves"

10:15-10:45 T. Solomon: "Experimental studies of the motion of reaction fronts and active tracers in laminar flows"

10:45-11:15 Coffee break

11:15-11:45 E. Villermaux: "The Disgregation of Liquids"

11:45-12:15 J. Kolinski: "Ringin' the Water Bell"

12:15-13:30 Lunch break (Fabiano Cafeteria)

Session 4: Inelastic strain localization in amorphous solids – Chair: E. Lerner

13:30-14:15 A. Needleman: "Mesoscale Modeling of Shear Band Evolution in Amorphous Notched Bars"

14:15- 14:45 M. Falk: "How glasses fail: Insights from atomistic modeling"

14:45-15:15 Coffee break

15:15-16:00 I. Procaccia "Shear bands as manifestation of a criticality in yielding amorphous solids"

16:00-16:30 J.-L. Barrat: "Correlation and shear bands in a plastically deformed granular medium"

16:30-17:00 Coffee break

Mini-session 1: Metric description of soft matter – Chair: B. Roman

17:00-17:30 E. Efrati: "Stationary states and delayed stability loss in viscoelastic solids"

17:30-18:00 H. Aharoni: "The Smectic Order of Wrinkles"

18:00 Leaving to Israel Museum

18:30-22:00 **Tour & conference dinner**



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Wednesday Oct. 18

8:30-12:30 **A tour in the old city**

12:45-14:30 Lunch break (Fabiano Cafeteria)

Session 5: Friction and Fracture I - Chair: R. Viesca

14:30-15:15 M. Marder: "Fracture, Friction, and Fineberg"

15:15-15:45 M. Adda Bedia: "Morphological and dynamic instabilities in brittle fracture"

15:45-16:15 C. Marone: "The Mechanics of Slow Earthquakes and the Spectrum of Fault Slip Behaviors"

16:15-16:45 Coffee break

16:45-17:30 J. Rice: "Formation of stable margins to streams of fast-flowing ice in Antarctica"

Mini-session 2: Fineberg's lab: The next generation – Chair: E. Katzav

17:30-17:50 I. Kolvin: "Steps and branches: how crack fronts create surface structure"

17:50-18:10 I. Svetlizky: "Classical Shear Cracks Drive the Onset of Frictional Motion"

18:10-18:30 H. Shlomi: "The structure of slip-pulses and supershear ruptures driving slip in bimaterial friction"

18:30-19:30 Poster session

Thursday Oct 19

8:30-9:00 Gathering and coffee

Session 6: Friction and Fracture II – Chair: V. Lyakhovsky

9:00-9:30 R. Carpick: "Frictional Instabilities in the Presence of Chemical Bonding: Rate-and-State Effects in Nanoscale Contacts"

9:30-10:00 M. Urbakh: "Electrotunable Lubricity with Ionic Liquid Nanoscale Films"

10:00-10:30 J.-F. Molinari: "Debris-level origins of adhesive wear"

10:30-11:00 Coffee break

11:00-11:30 M. Ciccotti: "Stringing instability in the peeling of soft dissipative layers"

11:30-12:00 Z. Reches: "Dynamic fracturing in the solid Earth: from nanometers to continents"

12:00-13:30 Lunch break (Fabiano Cafeteria)



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Session 7: Fault dynamics: from the lab to the field – Chair: E. Aharonov

13:30-14:00 A. Sagy: "Geometrical evolution of slip surfaces: experimental observations"

14:00-14:30 E. Bayart: "Solid friction: Strengths and weaknesses of a patch of lubricant"

14:30-15:00 Coffee break

15:00-15:30 Y. Bar-Sinai: "Frictional sliding without geometrical reflection symmetry"

15:30-16:00 Y. Ben-Zion: "Testing predictions of bimaterial ruptures with San Jacinto fault zone data"

16:00 Closing remarks: Jay Fineberg

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Scientific Poster Sessions

#01: Anais Abramian, Institut de Physique du Globe de Paris

" Morphogenesis of laboratory rivers"

#02: Carmel A.B.Z. Shor, Weizmann Institute of Science

"Linear and Nonlinear Elasticity in Amorphous Solids"

#03: Michael Aldam, Weizmann Institute of Science

" Dynamic stability of frictional interfaces"

#04: Igor Berinski, Tel Aviv University

"Quasi-static, subsonic and supersonic regimes of splitting in dissimilar chains"

#05: Sam Dillavou, Harvard University

"Memory of Frictional Interfaces"

#06: cancellation.

#07: George Hentschel, Emory University

"Magnetic and Mechanical Instabilities in Amorphous Solids"

#08: Itamar Kolvin, The Hebrew University of Jerusalem

"Nonlinear focusing in dynamic crack fronts and the micro-branching transition"

#09: Lisa Lee, Harvard University

"The transition from rotation to counterrotation in swirling granular material."

#10: Edan Lerner, University of Amsterdam

"Nonlinear glassy modes"

#11: Ido Levin, The Hebrew University of Jerusalem

"Anomalously soft non-Euclidean springs"

#12: Yuri Lubomirsky, Weizmann Institute of Science

"Oscillatory instability in dynamic fracture and the breakdown of the classical theory of cracks"

#13: Ryan McKeown, Harvard University

"The Emergence of Small Scales in Vortex Ring Collisions"

#14: Rodolfo Ostillo Monico, University of Houston

" DNS of Vortex rings: collisions, reconnections and the turbulent cascade "

#15: Avraham Moriel, Weizmann Institute of Science

"Necking instabilities in elasto-viscoplastic materials"

#16: Yoav Pollack, Weizmann Institute of Science

"Emergent Many-body Interactions Suggest Realistic Inapplicability of Hard Sphere Theory"

#17: Ido Regev, Ben Gurion University of the Negev

"Yield in Amorphous Solids: The Ant in the Energy Landscape Labyrinth "

#18: Benoit Roman, PMMH, Université Paris 6 and Université Paris

"Fracture instabilities in torn brittle thin sheets"

#19: Roij Sayag, Ben Gurion University of the Negev

"Instability of non-Newtonian extensional flows"

#20: Nimrod Segall, Tel Aviv University

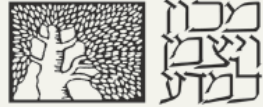
"Jamming vs Caging in 3D Jamming Percolation"

#21: Will Steinhardt, Harvard University

"Brittle Hydraulic Fracture In Transparent Heterogeneous Hydrogel"



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#22: Robert Viesca, Tufts University

"From dripping drops to slipping blocks"

#23: Emmanuel Viot, Harvard University

"Transition towards buckling in coke cans"

#24: Qin Xu, ETH Zurich

"Direct measurement of surface stress of stretched soft solids"

#25: Emmanuel Siéfert, PMMH, CNRS, ESPCI

"Baromorphs - Dynamical bioinspired shape-morphing"