Numbers and Nature

A symposium to celebrate the life and legacy of Mitchell J. Feigenbaum.

Thursday, June 2, 2022 — Lecture Hall 6-120

8:30 Registration

9:00 Welcome

Daniel Rothman — *Professor of Geophysics and Co-Director of the Lorenz Center, MIT-EAPS*
Gemunu Gunaratne — Moores Professor of Physics, University of Houston

MORNING LECTURE SESSION 1

9:10 Maps and Shapes
L. Mahadevan — *Professor of Physics, de Valpine Professor of Applied Mathematics, and Professor of Organismic and Evolutionary Biology, Harvard*

Geometry, Topology, and Electrophysiology
Adam Cohen — *Professor of Chemistry, Chemical Biology, and Physics, Harvard*

Mitchell's Role in Chaos *(Presented via Zoom)*
Albert Libchaber — *Detlev W. Bronk Professor of Physics, Rockefeller University*

10:40 Coffee Break | Chipman Room, 6-104

MORNING LECTURE SESSION 2

11:00 Ein Sturm im Wasserglas
Björn Hof — *Professor of Physics, IST Austria*

Hydrodynamics and Microbes
Alex Petroff — *Professor of Physics, Clark University*

Life and Death of Turbulence *(Presented via Zoom)*
Nigel Goldenfeld — *Swanlund Chair, Center for Advanced Study Professor of Physics, UC San Diego*

12:30 Lunch on your own

AFTERNOON LECTURE SESSION 1

2:00 Optics, Vision, and Evolution After Mitchell Feigenbaum
Jean-Pierre Eckmann — *Professeur Honoraire, University of Geneva*

The DeltaCELT Rattleback and Anamorphic Images
Ken Brecher — *Professor of Astronomy and Physics, Emeritus, Boston University*

Stories of Fluids and Light *(Presented via Zoom)*
Reymond E. Goldstein — *Schlumberger Professor of Complex Physical Systems, Univ. of Cambridge*

Mathematics, Computation, and Nature
Stephen Wolfram — *Founder and CEO, Wolfram Research*

4:00 Coffee Break | Chipman Room, 6-104

Thursday, June 2, 2022 Lecture Hall 6-120

KEYNOTE LECTURE

4:30 Four Illusions
Sir Michael Berry — *Melville Wills Professor of Physics (Emeritus), University of Bristol*

6:00 Public Reception | Ida Green Lounge, 9th Floor, Building 54

7:30 Dinner | Morss Hall, Walker Memorial, Building 50 — *by invitation, preregistration required*

Friday, June 3, 2022 Lecture Hall 6-120

8:30 Registration

MORNING LECTURE SESSION 1

9:00 Turbulence, From Newton's Quadratic Law of Drag to Mitchell Feigenbaum and Recent Times
Yves Pomeau — *Emeritus Research Director, French National Centre for Scientific Research*

Broken Symmetries in Living Systems
Nikta Fakhri — *Thomas D. and Virginia W. Cabot Career Development Professor, MIT-Physics*

Overcoming the Random Closed Packed Barrier: Crystallization in Granular Media
(Presented via Zoom)
Harry Swinney — *Professor Emeritus, University of Texas at Austin*

10:30 Coffee Break | Chipman Room, 6-104

MORNING LECTURE SESSION 2

11:00 Singularity in a Teacup — When Nature Gives Infinity
Dwight Barkey — *Professor of Mathematics, University of Warwick*

Vortex Sheets and Turbulent Statistics *(Presented via Zoom)*
Sasha Migdal — *Research Professor of Physics, NYU*

Venus as a Potentially Habitable Planet
Sara Seager — *Class of 1941 Professor of Planetary Science, Professor of Physics, and Professor of Aeronautics and Astronautics, MIT-EAPS, Physics and AeroAstro*

12:30 Lunch on your own

Friday, June 3, 2022 Lecture Hall 6-120

AFTERNOON LECTURE SESSION 1

2:00 **Encoding Patterns in Single-Cell Locomotion: Oscillations, Synchronization, and Excitability**
Kirsty Wan — *ERC Starting Grantee, Senior Lecturer, University of Exeter*

The Mysteries of Gaps and Pile-Ups at Planetary Resonances
Renu Malhotra — *Louise Foucar Marshall Science Research Professor and Regents Professor of Planetary Sciences, University of Arizona*

Neural Manifolds for Control of Movement *(Presented via Zoom)*
Sara A. Solla — *Professor of Neuroscience and Physics, Northwestern*

3:30 **Coffee Break | Chipman Room, 6-104**

AFTERNOON LECTURE SESSION 2

4:00 **Hydrodynamic Quantum Analogs**
John Bush — *Professor of Applied Mathematics and Fluid Dynamics, MIT-Math*

Shocks and Surprises: Screening of Elasticity by Plastic Charges in Amorphous Solids
Itamar Procaccia — *Barbara and Morris L. Levinson Professorial Chair in Chemical Physics, Weizmann Institute of Science*

Glassy Dynamics in Earth's Carbon Cycle
Dan Rothman — *Professor of Geophysics and Co-Director of the Lorenz Center, MIT-EAPS*

5:30 **Adjourn**

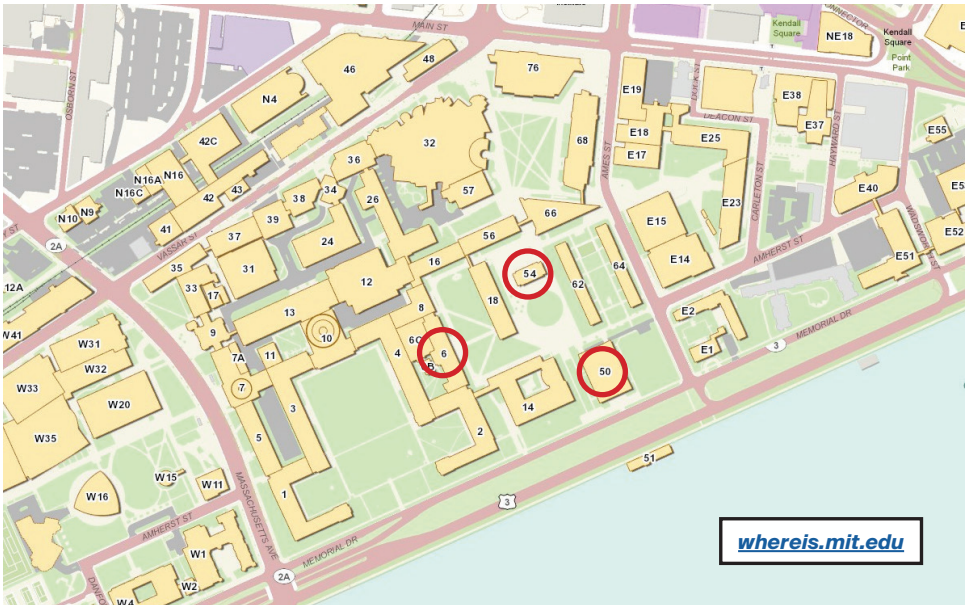
SUGGESTED WALKING DISTANCE LUNCH SPOTS

Fast / Casual

- **Forbes Café** » Stata Center, Building 32
- **Vester** » Kendall Square, 73 Ames Street
- **CAVA** » Kendall Square, 82 Ames Street
- **Clover Food Lab** » Kendall Square, 355 Main Street
- **Café Luna** » 612 Main Street
- **Sweetgreen** » 201 Galileo Galilei Way

Sit-Down / Table Service

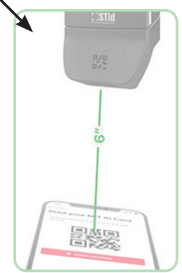
- **Catalyst** » 300 Technology Square, Main Street
- **Mex Taqueria** » 500 Technology Square, Main Street
- **Area 4** » 500 Technology Square, Main Street
- **Sulmona** » 608 Main Street
- **Amelia's Trattoria** » 111 Harvard Street
- **Black Sheep** » Kendall Square Hotel, 350 Main Street



Non-MIT Attendees — Tim Ticket registration and Covid health attestation required for campus access.

Using your smartphone, scan this QR code to be taken to MIT's Tim Ticket website. Follow these steps to complete your Tim Ticket registration:

- Click or tap on Visitor.
- Enter your mobile number and click Send OTP to receive a one-time PIN code via SMS.
- Enter the PIN code you received and tap Login.
- Enter your contact details and complete the health attestation.
- The app will display a private QR code for you to scan at the electronic readers stationed outside building entrances to gain access.
- Present your Tim Ticket QR code below the scanner. You can display your QR code from the MIT Tim Tickets mobile application or by printing it out from the **visitors.mit.edu** website.
- Scan your QR code by holding your phone at least 6 inches below the scanner, with the QR code face up.
- Do not hold your phone in front of the of the scanner, too close to the scanner, or with the screen facing away from the scanner.



You must repeat the health attestation each day prior to visiting campus.

Questions? Email Alma Pellecer: pellecer@mit.edu