

**Self-Organization in physics and biology,  
morphogenesis, turbulence, walking droplets and  
non-linear physics.**

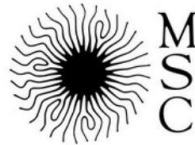
**Paris 4<sup>th</sup>-7<sup>th</sup> June 2024**

**International meeting in memory of**

**Yves Couder**

**Scientific Program**

With the generous support of



# International meeting in the honor of

**Yves Couder (1941-2019)**

**Paris Sciences et Lettres\*/Université de Paris-Cité**

The meeting is held on two sites.

The first two days on the campus of Université Paris-Cité Grands Moulins. Amphithéâtre  
Buffon 15 rue Hélène Brion 75013 Paris

The last two days at the Ecole Normale Supérieure Amphi Jaurès Accès via 24 rue Lhomond  
75005 Paris, enter and cross the garden.

## Program

**Tuesday, 4<sup>th</sup> June 2024-Amphithéâtre Buffon,**

**15 rue Hélène Brion 75013**

**Université de Paris-Cité @Grands Moulins**

**S stands for Selected abstract**

8:30-9:00 *Registration and Coffee*

**Session I Yves Couder Legacy**

9:00-9:15 *Welcome* Laurent Limat, Martine Ben Amar  
Maximilien Cazayous Doyen (Dean)  
Faculté des Sciences Université de Paris-Cité

9:15-9:45 Françoise Argoul: *Capturing the music of living systems: from human voice to electroencephalogram rhythms with time-frequency analysis*

9:45-10:15 Stéphane Douady: *Yves Couder: A complex man, for complex systems.*

10:15-10:45 Benoît Roman: *Inflatable architected elastomers*

**10:45-11:00 Break**

11:00-11:30 Yves Pomeau: *Flood of rivers as a subcritical bifurcation.*

11:30-12:00 Bruno Andreotti: *A gravity driven inverse cascade controls the size distribution of raindrops*

12:00-12:30 Mingming Wu: *Biological matrices regulate cell and tissue mechanics*

12:30-14:00 *Lunch is taken in caterers or restaurants in the neighborhood. Lunch is not provided by the meeting.*

**Session II Biological Morphogenesis**

- 14:00-14:30 Yasmine Meroz: *Plant Tropisms as a Window on Emergent Memory and Computation in Distributed Systems*  
14:30-15:00 Alain Goriely: *Sachs' education and the strange dynamics of potted plants*  
15:00-15:30 Etienne Couturier: *Lokhart's law a quantitative predictive tool ?*

**15:30-15:45 Break**

- 15:45-16:15 Tomas Bohr: *How leaves manage extreme pressure differences: Modelling the complex cellular network for water and sugar flow through a pine needle*  
16:15-16:45 Ray Goldstein: *Stochastic Geometry of Simple Multicellular Organisms*  
16:45-17:15 S39 Philippe Marmottant: *Solving the mystery of embolism repair in plants after a period of drought*  
17:15-17:35 S49 Germain Rousseaux: *The self-organization of grassy mounds on water or mottureaux*  
17:40-18:00 Michel Juffé: *Friendly philosophical reflexions with Yves on history and memory*

**18:00 In memoriam Julien Moukhtar, Laurent Limat**

**18h30 Reception buffet at Amphithéâtre Buffon**

**Wednesday, 5<sup>th</sup> June, 2024-Amphithéâtre Buffon, 15 rue Hélène Brion  
Université de Paris @Grands Moulins**

**Session III Hydrodynamics and instabilities**

- 9:00-9:30 Anke Lindner: *Transport dynamics of spherical microparticles and fibers in inertioelastic vortex flows*  
9:30-10:00 Hamid Kellay: *Experiments on turbulent friction in 2D*  
10:00-10:30 S47 Julien Dervaux: *Nonlinear phototaxis and instabilities in suspensions of light-seeking algae*

**10:30-10:45 Break**

- 10:45-11:15 Anne Juel: *Oscillatory dynamics in viscous fingering*  
11:15-11:45 Daniel Bonn: *Living polymers: Entangled active T. Tubifex worms*  
11:45-12:15 Suzie Protière: *The swelling and spreading of drops on fibers*

**12:15-14:00 Lunch-Installation of the Posters**

**Session IV Hydrodynamics, turbulence, transport**

- 14:00-14:30 Laurette Tuckerman: *Exotic patterns in Faraday waves*  
14:30-15:00 Bérangère Dubrulle: *Vortex interactions in a von Karman flow*  
15:00-15:30 Stephan Fauve: *Stationarity constraint on the energy flux and intermittency*

**15:30-16:00 Break**

16:00-16:20 S33 Eric Lajeunesse: *Self-organization of morphology and sediment transport in alluvial rivers*

16:20-16:40 S12 Martin Chaigne: *Emergence of singularities in dissolution patterns*

16:40-17:00 S21 Laurent Duchemin: *Dimple drainage before the coalescence of a droplet deposited on a smooth substrate*

17:00-17:20 S31 Hugues Chaté: *Robust edge flows in swarming bacteria colonies*

**17:30-19:30 Poster session**

**Thursday 6th June 2024**

**29 rue d'Ulm Paris ACCESS via 24 RUE LHOMOND 75005**

**Ecole Normale Supérieure–PSL\* Amphithéâtre Jaurès**

**Session V New avenues in non-linear physics**

9:00-9:30 Ludovic Pauchard: *Morphogenetic processes: singularities induced by mechanical instabilities*

9:30-10:00 Masaki Sano: *Cell Sheet Dynamics and Mechanics for Structure Formation*

10:00-10:30 Arezki Boudaoud: *Noise and robustness in plant morphogenesis*

**10:30-10:45 Break**

**Session V I New avenues in non-linear physics**

10:45-11:15 Itamar Procaccia: *Anomalous Elasticity and Emergent Dipole Screening in Amorphous Solids*

11:15-11:45 Herbert Levine: *Fluctuation-dominated Fronts; New Wine in Old Bottles*

11:45-12:15 Dan Harris: *Capillary-wave propulsion: from walking to surfing*

**12:15-14:00 Lunch**

**Session VII Walking droplets**

14:00-14:30 Emmanuel Fort: *Water waves in time varying media: from wave-particle duality to time reversal and to antigravity*

14:30-15:00 John W. M. Bush: *Pilot wave hydrodynamics*

15:00-15:20 S45 Giuseppe Pucci: *Self-propulsion of drops floating on an immiscible liquid bath*

**15:30-16:00 Break**

16:00-16:20 S36 Patrice Le Gal: *On the wanderings of a ludion in a corral: in search of a quantum analogy*

- 16:20-16:40 S50 Pedro Saenz: *From walking droplets to galloping bubbles*  
 16:40-17:00 S8 Ambre Bouillant: *Self-excitation of Leidenfrost stars*  
 17:00-17:20 S27 Philippe Gondret: *A kaleidoscope of impulse water waves generated by a vertical wall motion*  
 17:20-17:40 S16 Stéphanie Deboeuf: *Compaction and buckling of an elastic sheet under confinement by rigid walls*  
 17:40-18:00 S1 Mokhtar Adda-Bedia: *Nonlinear Elastic Fracture Mechanics*

**18:30** *Aperitif in the garden of the Ecole Normale Supérieure located nearby the Amphi Jaurès*

**Friday 7th June 2024**  
**Ecole Normale Supérieure–PSL\* Amphithéâtre Jaurès**  
**29 rue d’Ulm Paris 75005 ACCESS via the 24 rue LHOMOND**

**Session VIII New avenues in non-linear physics**

- 9:00-9:30 Vincent Hakim: *Active mechanics, force transmission and supracellular actomyosin cable formation*  
 9:30-10:00 Jay Fineberg: *The Physics of the Onset of Frictional Motion: How does friction start?*  
 10:00-10:30 Elsa Bayart: *Interaction between slowly slipping and locked frictional interfaces*

**10:30-10:45 Break**

- 10:45-11:15 Boris Shraiman: *In search of Emergent Simplicity*  
 11:15-11:45 Linda Cummings: *Simulating nanoparticle formation by pulsed laser induced dewetting*  
 11:45-12:15 Nicolas Vandewalle: *Cracking the capillary code*

**12:15-14:00 Lunch**

**Session IX New avenues in non-linear physics**

- 14:00-14:30 Emmanuel Villermaux: *20 000 Aerosols under the Seas (learning from analogies)*  
 14:30-15:00 }  
 15:00-15:30 } Baptiste Auvity, Sébastien Kuchly, Antonin Eddi and Stéphane Perrard: *Sea ice experiments: from lab to field*

**15:30-15:45 Break**

- 15:45-16:15 S43 Anand Oza: *Coarse-grained models for schooling wings in fast flows*  
 16:15-16:35 S29 Frédéric Moisy: *Wind waves and viscous solitons*  
 16:35-16:55 S25 François Gallaire: *A gap-averaged model for Faraday waves in Hele-Shaw cells*

**Closing conference**

17:00-17:30 Mathias Fink: *Gouttes, antennes et retournement temporel*

**Amphithéâtre Buffon is located 15 rue Hélène Brion Paris 75013. Métro line 14 ; bus line 89 ; RER C Bibliothèque François Mitterrand.**

**Amphithéâtre Jaurès is located 29 rue d'Ulm, ACCESS via the 24 rue LHOMOND Paris 75005**

**Métro line 10 Cardinal Lemoine or Place Monge or Censier Daubenton ; bus line 89 Rue Soufflot ; RER C Luxembourg.**

**Organizers' Phone # 0682287368**