

Fluid and Elasticity 2015

22–24 June 2015
Biarritz, France
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PROGRAM

Monday, June 22

7:45 – 8:15 Registration and opening talk

8:15 – 9:00 Invited speaker (Chair: E. Lauga)

- J.-F. Joanny
Hydrodynamics and growth of tissues

9:00 – 9:45 Low Re I (Chair: D. Vella)

- E. Lauga, Y. Man
Asymptotic models of interacting rotating filaments
- A. Djellouli, C. Quilliet, G. Coupier, P. Marmottant
Swimming through shell buckling
- F. P. Gosselin, P. Neetzow, M. Paak
Buckling of a beam extruded into highly viscous fluid

9:45 – 10:15 Coffee break

10:15 – 12:00 Wetting, drops, bubbles I (Chair: E. Dufresne)

- S.-M. Gernay, T. Gilet, P. Lambert, W. Federle
Elastocapillarity in insect hairy adhesion: IRM investigation
- E. Jambon-Puillet, S. Protière, C. Josserand
Fold formation in a heavy floating membrane
- S. Karpitschka, S. Das, M. van Gorcum, H. Perrin, B. Andreotti, J. H. Snoeijer
Dynamic contact angle of a soft solid
- F. Mazuel, M. Reffay, J. C. Bacri, J. P. Rieu, C. Gay, C. Wilhelm
Flattening stem cells spheroids with magnetic super-gravity evidences a size dependent elastocapillary transition
- C. Semprebon, T. Krüger, H. Kusumaatmaja
Lattice Boltzmann modeling of multiphase flow in contact with elastic surfaces
- N. Taccoen, D. Z. Gunes, C. N. Baroud
Fluid and plasticity: the buckling of colloid-armored bubbles
- M. Brinkmann, C. Herrmann, C. Semprebon, D. Michler, R. Seemann
Condensation of water droplets between elastic ridges

12:00 – 3:00 Lunch break

3:00 – 3:45 Invited speaker (Chair: C. Eloy)

- H. M. Nepf
Flexible plants in flow and implications for flux and drag at the blade and canopy scale

3:45 – 5:00 Short talks I (Chair: C. Eloy)

- E. Virost, X. Amandolese, P. Hémon
Coupling between a flag and a spring-mass oscillator
- J. Mougél, Y. Xia, O. Doaré, S. Michelin
Flag flutter in a non-uniform potential flow
- K. Onoue, K. S. Breuer
Aeroelastic stability of a cyber-physical flat plate driven by large-scale vortex formation
- A. Cros, A. Sandoval Hernández
Fluctuation of a flexible plate inside the von Karman street
- Z. Yu, C. Eloy
An extension of slender-body theory for moderate aspect ratio bodies
- E. Dehandschoewercker, D. Quéré, C. Clanet
Catching the wave
- B. Néel, H. Lhuissier, L. Limat
Viscoelasticity breaks the symmetry of impacting jets

- L. J. Cummings, L. Kondic, M. A. Lam, T.-S. Lin
Transitions and instabilities in flow of nematic liquid crystal on an incline
- E. du Pontavice, Y. Parlier, D. Quéré, C. Clanet
Kite propulsion
- J. Marthelot, G. Goon, P. M. Reis
Fanning the optimal breeze with an abanico
- F. Box, J. A. Neufeld, A. W. Woods
The impact of particulates on fracture formation and propagation
- M. Heil, C. D. Bertram
A poro-elastic fluid-structure interaction model of syringomyelia
- H. Chauvet, O. Pouliquen, Y. Forterre, B. Moulia, V. Legué
How plants detect gravity, a story of grains and fluids
- X. Noblin, M. Pellegrin, M. T. Perez Zaballos, C. Llorens, C. Scognamiglio, A. El Amri, Y. Bouret, M. Argentina
Cavitation nucleation in natural and artificial confined systems
- T. Leclercq, E. de Langre
Drag reduction of flexible beams in shear flow
- M. Hassani, F. P. Gosselin, N. W. Mureithi
Large Bending and Torsional Deformation of an Elastic Rod Subjected to Fluid Flow

5:05 – 5:35 Coffee break

5:35 – 6:50 Instabilities (Chair: T. Bohr)

- O. Doaré, O. Cadot, J. Degroote, J. De Ridder, L. Divaret, P. Moussou, J. Vierendeels
Fluid forces exerted on slender cylinders in a flow
- F. Gallaire, A. Fani
Flow-induced instabilities of a pendulum
- S. G. Llewellyn Smith, A. Cros
Modelling the sky dancer
- G. Verhille, P. Le Gal
Fiber deformation by a turbulent flow: curvature statistics
- S. Michelin, C. Grouthier, G. Antoine, E. de Langre
Energy harvesting efficiency of cables in vortex-induced vibrations

Tuesday, June 23

8:00 – 8:45 Invited speaker (Chair: R. Vermorel)

- T. Bohr
The fluid dynamics of vascular transport in plants

8:45 – 9:45 Flying & swimming (Chair: S. Michelin)

- R. Godoy-Diana, R. Zenit
Synthetic C-start maneuver in fish-like escape swimming
- U. Laci, S. Bagheri
Passive appendages in two and three dimensions generate drift through symmetry breaking
- M. Argentina, M. Gazzola, L. Mahadevan
Scaling macroscopic aquatic locomotion
- M. Piñeirua, R. Godoy-Diana, B. Thiria
On the importance of resistive thrust for inertial undulatory swimmers

9:45 – 10:15 Coffee break

10:15 – 12:00 Confined flows, porous and granular media (Chair: R. Vermorel)

- J. Alvarado, J. Comtet, A. Hosoi
Flow against the grain: a Newtonian microfluidic diode
- L. Ducloué, A. Juel, A. Hazel
Multiple bubble propagation modes in elasto-rigid models of airway reopening
- J. Lister, G. Peng
Viscous peeling processes under an elastic lid
- A.-V. Salsac, P.-Y. Gires, A. Le Goff, D. Barthès-Biesel
Characterization of the mechanical properties of capsule populations using microfluidic techniques

- E. Kolb, N. Algarra, D. Vandembroucq, A. Lazarus
2D dense granular flow interacting with a flexible beam
- J. A. Neufeld, T. Le Reun
Dynamics of fluid-driven fracturing in magneto-elastic materials
- C. Josserand, E. Jambon-Puillet, S. Neukirch, S. Protière
Models for granular raft

12:00 – 3:00 Lunch break

3:00 – 3:45 Invited speaker (Chair: J. Snoeijer)

- E. R. Dufresne
Surface tension and the mechanics of soft solids

3:45 – 5:00 Short talks II (Chair: J. Snoeijer)

- S. B. Elbaz, A. D. Gat
Dynamics of viscous liquid within a closed elastic cylinder subject to external forces with application to soft-robotics
- A. Gat, S. Rubin, E. Boyko, M. Becovici
Elastic surface deformations driven by non-uniform electroosmotic flow in a Hele-Shaw cell
- M. Gomez, D. Moulton, D. Vella
Flow-induced “snap-through”
- D. Pihler-Puzović, A. Juel, M. Heil
Wrinkly fingers – fluid-structure interaction in elastic-walled Hele-Shaw cells
- N. Gallé, Q. Brosseau, P. Vlahovska
Flow-morphology coupling in biomimetic membranes
- S. K. Wilson, P. H. Trinh, H. A. Stone
A plate on the free surface of a thin film of a viscous film. Part 1: A pinned or free floating rigid plate
- P. H. Trinh, S. K. Wilson, H. A. Stone
A plate on the free surface of a thin film of viscous film. Part 2: A pinned elastic rigid plate
- A. Mathijssen, A. Doostmohammadi, T. Shendruk, J. M. Yeomans
Sorting of micro-swimmers in flowing viscoelastic fluids
- T. S. Chan, J. D. McGraw, S. Maurer, T. Salez, M. Benzaquen, E. Raphaël, K. Jacobs, M. Brinkmann
Effects of slippage on a dewetting drop
- T. Krüger, A. Pandey, J. Snoeijer, J. Harting
Deformable particles at liquid-liquid interfaces: interplay of elasticity and surface tension
- M.-C. Renoult, J. Peixinho, O. Crumeyrolle, I. Mutabazi
Drop dynamics on a viscoelastic filament: An experimental study
- H. de Maleprade, C. Clanet, D. Quéré
Bubble spreading on superaerophilic surfaces
- M. V. Gielen, M. Riepen, J. H. Snoeijer, H. Gelderblom
Drop impact on soft substrates
- A. Gas, S. Anand, D. Quéré, K. Varanasi
Depinning of droplets on rough surfaces
- J. Bueno, Y. Bazilevs, R. Juanes, H. Gomez
A computational model for durotaxis

5:00 – 5:30 Coffee break

5:30 – 6:45 Wetting, drops, bubbles II (Chair: M. Brinkmann)

- L. Limat, M. Zhao, J. Dervaux, M. Roché, L. Royon, F. Lequeux, T. Narita
Quasi-static wetting on well controlled gels: experiments and modelling
- N. Chastrette, P. Brunet, L. Royon, A. Bussonnière, M. Baudoin, O. Bou Matar, R. Wunenburger
Free-surface and flow dynamics of a drop subjected to surface acoustic waves
- J. Comtet, B. Keshavarz, J. W. M. Bush
Capturing drops with a flexible fiber
- F. Boulogne, F. Ingremeau, L. Limat, H. A. Stone
Homogeneous deposition of particles by imbibition on hydrogels
- E. Verneuil, J. Dupas, L. Talini, F. Lequeux, M. Ramaioli, L. Fornay
Glass transition accelerates the spreading of volatile droplets on soluble visco-elastic polymers

8:00 Conference dinner

Wednesday, June 24

8:00 – 8:45 Invited speaker (Chair: F. Gosselin)

- A. Asnacios
Cell body contact-angle dictates the onset of traction force generation and growth of adhesion complexes

8:45 – 10:00 Low Re II (Chair: F. Gosselin)

- M. K. Jawed, N. K. Khouri, F. Da, E. Grinspun, P. M. Reis
Propulsion and instability of flexible helical flagella
- T. R. Powers, M. A. Dias, M. S. Krieger, S. E. Spagnolie
Simple models for swimming in a liquid crystal solution
- J. A. Hanna, B. Chakrabarti
Catenaries in viscous fluids
- D. Saintillan, H. Manikantan, L. Li, S. E. Spagnolie
The sedimentation of flexible filaments
- R. Ledesma-Aguilar, J. M. Yeomans
Enhanced microswimmer motility in elastic confinement

10:00 – 10:30 Coffee break

10:30 – 12:00 Other topics (Chair: H. Nepf)

- C. Brückner, L. Kamps, J. Favier
Travelling wave characteristics along flexible flaps in oscillating flows
- B. Davidovitch
Gauss' theorem egregium and elasto-capillary phenomena in ultrathin films
- F. Elias, C. Gay, S. Kosgodagan Acharige, V. Leroy, C. Derec
Acoustics of liquid foams at the scale of the bubbles: vibration of soft membranes and their junctions
- S. Barsu, D. Doppler, N. Rivière, M. Lance
Canopy behaviour to steady and unsteady water flows
- J.-F. Louf, G. Guéna, Y. Forterre, E. Badel
Poroelastic coupling in natural and synthetic branches: relation with plants mechano-perception
- L. Tadrist, M. Saudreau, E. de Langre
Foliage dynamics under wind: models and experiments

12:00 – 1:30 Lunch break

1:30 – 2:30 Wetting, drops, bubbles III (Chair: C. Josserand)

- V. Demery, J. D. Paulsen, C. Santangelo, T. P. Russell, B. Davidovitch, N. Menon
Liquid drops like to wear thin polygonal dresses
- H. Elettro, S. Neukirch, A. Antkowiak, F. Vollrath
Elasto-capillary windlass: from spider webs to synthetic actuators
- C. Duprat, R. Labbé, A. Rewakowicz
Elastocapillary Mist Collector
- M. Coux, R. Thévenin, C. Clanet, D. Quéré
Influence of elasticity on superhydrophobicity

2:30 – 3:15 Invited speaker (Chair: C. Josserand)

- D. Vella
Elastocapillary dynamics: Pattern forming and the role of evaporation