
Name :	Loïc TADRIST	
Place of birth :	Aix-en-Provence, France	 0000-0001-6200-9842
Date of birth :	August 30th, 1988	
Age:	37 years old	Website :
Nationality:	French	https://lab.tadrisk.com
Marital status:	Married (2 children)	
Permanent address :	8 Avenue de la Cible, 13100 Aix-en-Provence, France	Contact : loic.tadrisk@univ-amu.fr Tel: (+33) 674 100 203

Areas of Interest

Plant biomechanics, Fluid-structure interaction, Fluid mechanics, Elasticity, Nonlinear physics, Mechanical actuators, Resilience of actuators.

Employment

- Since 2020 Associate Professor at Aix-Marseille University, Institute of Movement Sciences (ISM), Bio-inspired systems team. France
- 2017–2020 FNRS Research Fellow, microfluidics lab, University of Liège, Belgium
- 2015 – 2017 Postdoctoral Researcher, University of Liège, Belgium
- 2011–2015 PhD Candidate & teaching assistant, École Polytechnique, France
- 2007–2011 Normalien student, École Normale Supérieure of Paris-Saclay, France

Education

- 2015 PhD in fluid-structure interaction and plant biomechanics, "*Mechanics of foliage in wind: Multi-scale approach and biological consequences*", École Polytechnique, France. Highest honors
- 2011-2015 PhD candidate, École Polytechnique & INRAE Clermont-Ferrand, France. Supervisors: E. de Langre & M. Sautreau.
- 2011 Master 2 of history and philosophy of sciences, high honors, Sorbonne university, France.
- 2010 Master 2 of physics of liquids and soft matter, highest honors, University Paris VI.
- 2007-2011 Physics Department (Normalien), École Normale Supérieure de Cachan, France.

Bibliometry

Web of Science (October 2025) : h-index: 11; citations: 318
 Google scholar (October 2025) : h-index: 12; citations : 453.

Publications (Journal Citation Reports)

- [27] GILET, T.; TADRIST, L., 2025. Leaf oscillation and upward ejection of droplets in response to drop impact. *Physical Review Fluids*. Vol. 10, no. 5, p. 053601.
- [26] LEPAGNEUL, J.; TADRIST, L.; MERMOZ, E.; DIPERI, J.; LINARES, J.-M., 2025. Fatigue lifespan of compliant planetary roller screws: Multiscale modelling and stiffness measurements. *Mechanics & Industry (submitted)*.
- [25] PERRIER, R.; LINARES, J.-M.; TADRIST, L., 2025. Resilience of hierarchical actuators highlighted by a myosin-to-muscle mock-up. *Bioinspiration & Biomimetics*. Vol. 20, no. 2, p. 026013.
- [24] BAROIS, T.; BOUCHERIE, A.; TADRIST, L.; KELLAY, H., 2024. Controlled Locomotion of a Minimal Soft Structure by Stick-Slip Nonlinearity. *Physical Review Letters*. Vol. 133, no. 23, p. 238301.
- [23] LACORRE, P.; FIORE, L.; LINARES, J.-M.; TADRIST, L., 2024. Pressurized membranes between walls: Thermodynamic process changes force and stiffness. *Journal of the Mechanics and Physics of Solids*. Vol. 192, p. 105798.
- [22] MARQUEZ-FLOREZ, K.; ARROYAVE-TOBON, S.; TADRIST, L.; LINARES, J.-M., 2024. Elbow dimensions in quadrupedal mammals driven by lubrication regime. *Scientific Reports*. Vol. 14, no. 1, p. 2177.
- [21] DARBOIS-TEXIER, B.; TADRIST, L., 2023. Impact of a pressurized membrane: Coefficient of restitution. *Physical Review E*. Vol. 107, no. 5, p. 055001.
- [20] LEPAGNEUL, J.; TADRIST, L.; MERMOZ, E.; LINARES, J.-M., 2023. Axial backlash of planetary roller screw mechanisms: Geometric modelling and Sobol's analysis of design parameters. *CIRP Annals*.
- [19] LEPAGNEUL, J.; TADRIST, L.; SPRAUEL, J.-M.; LINARES, J.-M., 2022. Fatigue lifespan of a planetary roller-screw mechanism. *Mechanism and Machine Theory*. Vol. 172, p. 104769.
- [18] PERRIER, R.; TADRIST, L.; LINARES, J.-M., 2022. Damage resilience of manufactured and biological actuators. *Bioinspiration & Biomimetics*. Vol. 18, no. 1, p. 016006.
- [17] TADRIST, L.; MAMMADI, Y.; DIPERI, J.; LINARES, J.-M., 2022. Deformation and mechanics of a pulvinus-inspired material. *Bioinspiration & Biomimetics*. Vol. 17, no. 6, p. 065002.
- [16] BAROIS, T.; JALISSE, I.; TADRIST, L.; VIROT, E., 2021. Transition to stress focusing for locally curved sheets. *Physical Review E*. Vol. 104, no. 1, p. 014801.
- [15] TADRIST, L.; TEXIER, B. D.; LANZETTA, E.; TADRIST, L., 2021. Impact of a pressurised membrane: contact time. *International Journal of Impact Engineering*. Vol. 156, p. 103963.
- [14] IAZZOLINO, A.; TOURTIT, Y.; CHAFAÏ, A.; GILET, T.; LAMBERT, P.; TADRIST, L., 2020. Pick up and release of micro-objects: A motion-free method to change the conformity of a capillary contact. *Soft matter*. Vol. 16, no. 3, pp. 754–763.
- [13] TADRIST, L.; GILET, T.; SCHLAGHECK, P.; BUSH, J. W., 2020. Predictability in a hydrodynamic pilot-wave system: Resolution of walker tunneling. *Physical Review E*. Vol. 102, no. 1, p. 013104.
- [12] TADRIST, L.; SAMPARA, N.; ASHRAF, I.; ANDRIANNE, T., 2020. When can you expect contrast swing in a cricket game, and how to obtain it? *Sports Engineering*. Vol. 23, pp. 1–10.

- [11] YANG, C.-Y.; ERICKSTAD, M.; TADRIST, L.; RONAN, E.; GUTIERREZ, E.; WONG-NG, J.; GROISMAN, A., 2020. Aggregation Temperature of Escherichia coli Depends on Steepness of the Thermal Gradient. *Biophysical journal*. Vol. 118, no. 11, pp. 2816–2828.
- [10] TADRIST, L.; MOTTE, L.; RAHLI, O.; TADRIST, L., 2019. Characterization of interface properties of fluids by evaporation of a capillary bridge. *Royal Society Open Science*. Vol. 6, no. 12, p. 191608.
- [9] TADRIST, L.; SAMPARA, N.; SCHLAGHECK, P.; GILET, T., 2018. Interaction of two walkers: Perturbed vertical dynamics as a source of chaos. *Chaos: An Interdisciplinary Journal of Nonlinear Science*. Vol. 28, no. 9, p. 096113. ISSN 1054-1500.
- [8] TADRIST, L.; SAUDREAU, M.; HÉMON, P.; AMANDOLESE, X.; MARQUIER, A.; LECLERCQ, T.; DE LANGRE, E., 2018. Foliage motion under wind, from leaf flutter to branch buffeting. *Journal of the Royal Society Interface*. Vol. 15, no. 142, p. 20180010.
- [7] TADRIST, L.; SHIM, J.-B.; GILET, T.; SCHLAGHECK, P., 2018. Faraday instability and subthreshold Faraday waves: surface waves emitted by walkers. *Journal of Fluid Mechanics*. Vol. 848, pp. 906–945.
- [6] TADRIST, L.; DARBOIS-TEXIER, B., 2016. Are leaves optimally designed for self-support? An investigation on giant monocots. *Journal of Theoretical Biology*. Vol. 396, pp. 125–131.
- [5] TADRIST, L.; JULIO, K.; SAUDREAU, M.; DE LANGRE, E., 2015. Leaf flutter by torsional galloping: experiments and model. *Journal of Fluids and Structures*. Vol. 56, pp. 1–10.
- [4] BAROIS, T.; TADRIST, L.; QUILLIET, C.; FORTERRE, Y., 2014. How a curved elastic strip opens. *Physical review letters*. Vol. 113, no. 21, p. 214301.
- [3] DER LOUGHIAN, C.; TADRIST, L.; ALLAIN, J.-M.; DIENER, J.; MOULIA, B.; DE LANGRE, E., 2014. Measuring local and global vibration modes in model plants. *Comptes Rendus Mécanique*. Vol. 342, no. 1, pp. 1–7.
- [2] TADRIST, L.; SAUDREAU, M.; DE LANGRE, E., 2014. Wind and gravity mechanical effects on leaf inclination angles. *Journal of Theoretical Biology*. Vol. 341, pp. 9–16.
- [1] TADRIST, L.; BROCHARD-WYART, E.; CUVELIER, D., 2012. Bilayer curling and winding in a viscous fluid. *Soft Matter*. Vol. 8, no. 32, pp. 8517–8522.

Publications in proceedings

1. Leblanc, O., **Tadrist, L.**, Moreau, N., Brun, B., Gilet, T., & Hackens, B. An Affordable Pedagogical Setup for Wave-particle Duality and Applications to Chaotic Stadium Cavity. *15th International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS)* (pp. 398-403). *IEEE*. **2021**, Nis, Serbia.
2. L. A. Iazzolino, Y. Tourtit, A. Chafai, T. Gilet, P. Lambert and **L. Tadrist**, *Pick and release of micro-objects: a motion-free method to change the conformity of a capillary contact*, *MARSS Conference 2019*, Helsinki, Finland.

3. **L. Tadrist**, L. Motte, O.Rahli, L. Tadrist, Preliminary study of adhesion forces of an evaporating capillary bridge, *13-th International Conference on "Two-Phase Systems for Space and Ground Applications"*, **2018**, Xi'an, China.
4. **L. Tadrist**, M. Saudreau, E. de Langre, External loading changes Leaf Inclination Angle: Effects on direct light interception, *Functional Structural Plant Model*, **2013**, Saariselka, Finland.
5. **L. Tadrist**, M. Saudreau, E. de Langre, Leaf Flexibility and Tree Geometry: Effects on Leaf Inclination Angle Distribution, **2012**, Plant Biomechanics, Clermont-Ferrand, France.

Patents and Invention Disclosure

1. Tadrist, L.& Chaves-Jacob, J. (2025). Potentia Ex Fibrarum : Fibrous actuator for damage resilience (Invention disclosure, no. 2023-inv-0000013).SATT sud-est, Aix-Marseille University, France.
2. Tadrist, L. (2014) Helmet integrated impact measurement device, enveloppe Soleau.

Oral communications

Invited talks

1. Tartu Observatory, University of Tartu, Estonie, 23/09/2024. *Biomechanics of leaves: wind, rain and sun.*
2. Liphy, University of Grenoble, France, 16/01/22. *Making actuators resilient: Can we draw inspiration from Nature?.*
3. Emmanuel de Langre day, Ecole Polytechnique, France, 17/05/22. *Moving leaves.*
4. Carnot Star Institute, Aix-Marseille University, online, 20/04/2021. *Bioinspired actuators and dampers.*
5. Icube, University of Strasbourg, France, 10/2019. *Preliminary works on bio-inspired dampers.*
6. LMGC, University of Montpellier, France, 11/2018. *Macroscopic wave particule duality: why tunnelling should be unpredictable?.*
7. Institut Jean Lamour, Lorraine University, France, 04/2018. *Some results about wave mechanics.*
8. Liphy, University of Grenoble, France, 07/2017. *Exotic fluid structure interactions: walking droplets and balls.*
9. LBA, University Gustave Eiffel, France, 11/2016. *Some examples of exotic fluid-structure interactions: plants, walking droplets and balls. Transition towards impacts.*
10. LBMC, University Gustave Eiffel, France, 09/2016. *Some examples of exotic fluid-structure interactions: plants, walking droplets and balls. Transition towards impacts.*

International meetings

- 2025 [T] Tadrist, L., Gilet, T. Diffraction of walking droplets by a standing wave. **Droplets 2025**, Liège, Belgium.
- 2024 [T] Tadrist, L., Lacorre, P., Fiore, L. Macroscopic mechanical properties of pressurized cellular solids. **EMMC 2024**, Madrid, Spain.
- 2022 [T] Tadrist, L., Mammadi, Y., Diperi, J., Linares, J-M., Deformation and mechanics of a biomimetic pulvinus. **Plant biomechanics 2022**, Lyon, France.
- 2019 [T] Tadrist, L., Gilet, T., Schlagheck, P., Bush, J. M. W., Where ‘unpredictability’ shades off: the tunnelling of bouncing droplets. **Droplets 2019**, Durham, United Kingdom.
- 2019 [P] Tadrist, L., A. Iazzolino, Y. Tourtit, A. Chafaï, T. Gilet and P. Lambert, Capillary forces at the light of contact conformity: pick-and-release micro- objects. **ECIS 2019**, Leuven, Belgium.
- 2018 [T] Tadrist, L., Gilet, T., Bush, J. M. W., Resolving the fast dynamics in walker dynamics in walker tunnelling: making the unpredictable predictable. **Hydrodynamics Quantum Analogues 2018**, Providence (RI), USA.
- 2017 [T] Tadrist, L., Gilet, T., Faraday waves for walkers: theory and experiments, **APS - Division of Fluid Dynamics**, Denver (CO), USA.
- 2017 [T] Tadrist, L. Sautreau, M. and de Langre, E, Mechanics of foliage in wind: from leaf to foliage, **EACWE 2017**, Liège, Belgium.
- 2017 [T] Tadrist, L. Gilet, T., Bouncing dynamics leads to the chaotic interaction of two walkers, **Workshop Quantum Foundations**, Marseilles, France.
- 2017 [T] Tadrist, L. Gilet, T., Bouncing dynamics leads to the chaotic interaction of two walkers, **Waves and particles, novel insights**, Mexico city, Mexico.
- 2016 [T] Tadrist, L. Gilet, T., Stochastic interaction of walkers, **APS - Division of Fluid Dynamics**, Portland (OR), USA.
- 2016 [T] Tadrist, L. and Darbois-Texier, B., The bounce of an inflated ball, **Physics of Sports**, Palaiseau, France.
- 2015 [T] Tadrist, L. Sautreau, M. de Langre, E., Wind induced Foliage movement, **Fluid and Elasticity**, Biarritz, France.
- 2014 [T] Tadrist, L. Sautreau, M. de Langre, E. Flutter of leaves by torsional galloping, **Wind and Trees**, Águas de São Pedro, Brazil.
- 2013 [P] Tadrist, L. Sautreau, M. de Langre, E. External loading changes Leaf Inclination Angle: Effects on direct light interception, **Functional Structural Plant Model**, Saariselkä, Finland.
- 2012 [P] Tadrist, L. Sautreau, M. de Langre, E. Leaf Flexibility and Tree Geometry: Effects on Leaf Inclination Angle Distribution, **Plant Biomechanics**, Clermont-Ferrand, France.

2010 Forterre, Y. Quillet, C. Mahadevan, L. Richard, D. Tadrist, L. Simple experiments in thin plates: Persistence length of curvature and Snap- buckling instability. **APS March Meeting**, 2010.

[T] : Talk ; [P] : Poster

National meetings

1. Journées de la matière condensée, Marseille, 28-31 octobre 2024.

National research groups

1. GDR physique des plantes. (2016, 2018, 2022, 2024)
2. Rencontres du Non linéaire. (2017, 2018, 2019)
3. GDR Mephy (Mécanique-physique). (2013, 2014, 2015, 2023)

Research Supervision

Postdoctoral Supervision

1. Paul LACORRE, 2023-2025, *Stiffening of pressurized cellular solids, finite element study*. Funding: ANR MEXP. Top A Publications: 1 (+3 in progress).
2. Younès MAMMADI, 2021-2022, *Deformation of a pressurized cellular solid, influence of the inflation pattern*. Funding: ATER. Top A Publication: 1.

Current position : Associate professor, ENSAM, Aix-en-Provence.

Doctoral supervision

1. Louison FIORE, 2023-2026, *Mechanics of pressurized cellular tissues: Movements and resilience of the pulvinus of Mimosa Pudica*. Funding: ANR MEXP. Top A Publications: 1 (+3 in preparation). In progress. S.R: 50%.
2. Raphaël PERRIER, 2021-2025, *Contribution to the realization of an actuator mimicking the multi-scale structure of skeletal muscle*. ED Sciences du mouvement humain. Top A Publications: 2. Thesis defended on 26/05/2025. S.R: 50%.
3. Juliette LEPAGNEUL, 2021-2024, *Modeling the fatigue life of a planetary roller screw in aeronautical conditions*. CIFRE Airbus Helicopters. Top A Publications: 2. Thesis defended on 12/07/2024. S.R: 50%.

Current position : Specialist engineer, Airbus Helicopters.

S.R : Supervision rate.

PhD thesis examiner

1. Kairi Adamson PhD Thesis, opponent, University of Tartu, 24/09/2024.

PhD thesis comitee member

1. Lenaïs Mauguen, Underwater-acoustic-informed neural networks, 2024-2027.

Supervision of Master 2 students

1. Mourad OUTMANI, 03/25-07/25, *Biomimetism of nervous information transport*.
2. Lucas DUBOIS, 03/24-07/24, *KombuWood. Kombucha 3D-printing*.
3. Louison FIORE, 03/23-07/23, *Mechanical properties of pressurized cellular material*.
4. Andoni IZAGUIRRE, 09/21-06/22, *Testing bench development for impacts on neural cells*. Collaborator: Santiago RIVERA (Institut de neurophysiopathologie, UMR 7051, Marseille). Erasmus Mondragon university/Aix-Marseille University
5. Raphaël PERRIER, 03/21-07/21, *Design of an elementary actuator bio-inspired of myosine-actine bounds*. Polytech Tours/Aix-Marseille Université
6. Olivier Leblanc, 09/19-06/20, *Walking droplets in stadium*, Catholic University of Louvain.
7. Victòr VILARDUYA, 09/18-06/19, *Dynamics of leaves under rain*, University of Liège.

Supervision of Master 1 students

1. Lucie BETTINGER, 04/23-06/23, *Characterisation of a muscle mock-up actuator*, Aix-Marseille University.
2. Elise NICOLAS, 04/22-06/22, *measurement protocol to evaluate neural cells integrity and inflammation after impact*, Aix-Marseille University.
3. Amina MLAIKI, 04/20-06/20, *Design of an impact test bench*, Aix-Marseille University.
4. Dylan PANNIER, 04/20-06/20, *Allometric laws of muscle fibers*, Aix-Marseille University.
5. Benoît CALICE, 04/19-07/19, *Dynamic of beams under localized impact*, University of Liège.
6. Kevin JULIO, 03/14-06/14, *Effect of leaf shape on flutter instability*, INSA Haut de France/École polytechnique.
7. Nina WANG, 03/13-06/13, *Elastic reconfiguration under snow*, École polytechnique.

Supervision: others (L3, BUT, TIPE)

1. Loïc ROGNON 04/25-07/25, (BUT 3 GMP), *Impact of a two-mode vibration system: experimental set-up*, Aix-Marseille University.
2. Sharmaine BIN SUHERRTO, 05/25-06/25, (BUT 2 GMP), *Design and fabrication of a micro-osmotic pump*, Aix-Marseille University.
3. Hakimi BIN MOHAMAD NIZAM, 05/25-06/25, (BUT 2 GMP), *Test bench for potato parenchyma mechanical properties varying osmosis*, Aix-Marseille University.
4. Eliud FORTERRE, 05/24, (TIPE), *rupture of a climbing rope*.

5. Emmanuel ATTALI, 04/24-07/24, (L3 ENS Rennes), energy transfer during impact: study of a two-mode system, Aix-Marseille University.
6. Danish BIN SHAIFFIRUDIN, 04/24-06/24, (BUT 2 GMP), Timelapse of a drying Basilic, (T.E.: 100%), Aix-Marseille University.
7. Souhaila MOUMANE, 04/23-06/23, WebApp creation (BUT 2 Info)

Fundings and awards

Research funding (PI):

- 2022–2026 ANR, MExP (Machina Ex Pulvino), 319 k€
- 2022 Carnot Star, ChocCell: shock on neural cells, ≈10 k€.
- 2022 PEPS INSIS CNRS, ChocCell: shock on neural cells, 17 k€
- 2021 PhD funding (Doctoral school 353), muscle mock-up, PhD student: R. Perrier.
- 2021 PhD funding (CIFRE, Airbus Helicopters), fatigue lifespan of planetary roller-screw, PhD student: J. Lepagneul.
- 2018 FNRS mobility, Tunelling effect for walking droplets, visiting scholar at MIT (Massachusetts USA)
- 2017 Chargé de recherche (Junior researcher) at FNRS, Duo Corpora: interaction of walking droplets, FRS-FNRS, University of Liège, Belgium. 400 k€
- 2012 PhD funding (ASN), wind-foliage interaction, LadHyX, École polytechnique, France.
- 2007–2012 Normalien student, Physics department, ENS-Cachan, France.

Research funding (Collaborator):

- 2024–2027 ANR ResiRob, PI : Stéphane Violet (ISM, Aix-Marseille Université)
- 2023–2026 A*MIDEX Activ'Plant, PI : Yoël Forterre (IUSTI, Aix-Marseille Université)

Academic funding:

- 2024 FIP 3D-NoPrint, Plastic recycling for 3D printing, 40 k€ (FIP : 28 k€, IUT : 12 k€)
Equipment: 1 shredder, 1 air dryer, 1 winding extruder, 1 thermoformer, 1 injection press.
- 2022 FIP Inproto, Rapid prototyping room, 53 k€ (FIP : 30 k€, IUT : 23 k€)
Equipment: 1 laser cutter, 7 3D-printers, 7 CAD workstations, 1 collaborative screen, 1 video projector, 1 electronic component soldering station. Upgrading of the premises (air extraction, air conditioning and disabled access).

Awards:

- 2019 Best application paper award, *Pick and release of micro-objects: An actuation free method to change the conformity of a capillary contact.*, MARSS2019, Helsinki, Finland.
- 2018 Couverture du journal *Chaos: an Interdisciplinary journal of Nonlinear Science*, Volume 28, Number 3, part 1 of 2. FRS-FNRS, Université de Liège, Belgique.
- 2015 Prix de thèse inno-vent pour la recherche innovante en ingénierie du vent. Association de l'Ingénierie du Vent, AIV
- 2009 Prix d'action internationale ENS Cachan : "*Thermotaxis of E. Coli*", Engineering Department, University of California à San Diego, USA.

Science and society

1. *Des micro-gouttes pour la vie*, with S. van Loo, I love science Festival, 2019, Bruxelles, Belgium.
2. *Biomimétisme: comprendre les plantes avec des outils d'ingénieur*, with T. Gilet, Cycle de conférence de la haute école de la province de Liège, 2018, Liège, Belgium.
3. *plantes en vibration*, with P. Hémon and E. de Langre, Fête de la science, 2013, Palaiseau, France.