

Full list of Frédéric Caupin's scientific communications

Thesis

PhD thesis, Université Paris 6, spécialité Physique Quantique, supervised by Sébastien Balibar: *Cavitation in helium 3: a Fermi liquid at negative pressure* (mention très honorable avec félicitations du jury). Defended on January 19th, 2001 at Ecole Normale Supérieure, Paris. Members of the jury: MM. Jacques Treiner, Sébastien Balibar, Thierry Giamarchi, Pierre-Étienne Wolf and Pierre-Jean Nacher.

Habilitation à diriger des recherches de l'Ecole Normale Supérieure: *From helium to water: capillarity and metastability in two exceptional liquids*. Defended on November 2nd, 2009 et Ecole Normale Supérieure. Members of the jury: M^{mes} Christiane Alba-Simionesco, Elisabeth Charlaix, et MM. C. Austen Angell, Stéphane Fauve, Laurent Limat, Detlef Lohse and Pierre-Étienne Wolf.

Book chapter

F. Caupin and A.D. Stroock, The stability limit and other open questions on water at negative pressure, in Liquid Polymorphism, *Advances of Chemical Physics*, vol. **152**, edited by H.E. Stanley, Wiley, New York, 2012, p. 51-80.

Articles in international peer-reviewed journals

- [A1] X. Chavanne, S. Balibar, and F. Caupin. Acoustic crystallization and heterogeneous nucleation. *Phys. Rev. Lett.*, 2001, **86**, 5506-5509.
- [A2] F. Caupin and S. Balibar. Cavitation pressure in liquid helium. *Phys. Rev. B.*, 2001, **64**, 064507 (1-10).
- [A3] F. Caupin, S. Balibar, and H. J. Maris. Anomaly in the stability limit of liquid helium 3. *Phys. Rev. Lett.*, 2001, **87**, 145302 (1-4).
- [A4] X. Chavanne, S. Balibar, and F. Caupin. Acoustic nucleation of solid helium 4 on a clean glass plate. *J. Low Temp. Phys.*, 2001, **125**, 155-164.
- [A5] T. Ueno, S. Balibar, T. Mizusaki, F. Caupin, and E. Rolley. Critical Casimir effect and wetting by helium mixtures. *Phys. Rev. Lett.*, 2003, **90**, 116102 (1-4).
- [A6] H.J. Maris and F. Caupin. Nucleation of solid helium from liquid under high pressure. *J. Low Temp. Phys.*, 2003, **131**, 145-154.
- [A7] C. Appert, X. Tenaud, X. Chavanne, S. Balibar, F. Caupin and D. d'Humières. Nonlinear effects and shock formation in the focusing of a spherical acoustic wave. *Eur. Phys. J. B*, 2003, **35**, 531-549.
- [A8] T. Ueno, S. Balibar, T. Mizusaki, F. Caupin, M. Fechner and E. Rolley. Optical measurement of wetting by helium 3-helium 4 mixtures near their tri-critical point. *J. Low Temp. Phys.*, 2003, **130**, 543-555.
- [A9] F. Werner, G. Beaume, A. Hobeika, S. Nascimbène, C. Herrmann, F. Caupin and S. Balibar. Liquid helium up to 160 bar. *J. Low Temp. Phys.*, 2004, **136**, 93-116.
- [A10] F. Caupin. Liquid-vapor interface, cavitation, and the phase diagram of water. *Phys. Rev. E*, 2005, **71**, 051605 (1-5).
- [A11] F. Ancilotto, M. Barranco, F. Caupin, R. Mayol, and M. Pi. Freezing of helium 4 and its liquid solid interface from density functional theory. *Phys. Rev. B*, 2005, **72**, 214522, 1-5.
- [A12] R. Ishiguro, F. Caupin, and S. Balibar. Homogeneous nucleation of crystals by acoustic waves. *Europhys. Lett.*, 2006, **75**, 91-97.
- [A13] S. Sasaki, R. Ishiguro, F. Caupin, H.J. Maris, and S. Balibar. Superfluidity of grain boundaries and supersolid behavior. *Science*, 2006, **313**, 1098-2000.
- [A14] E. Herbert, S. Balibar and F. Caupin. Cavitation pressure in water. *Phys. Rev. E*, 2006, **74**, 041603 (1-22).

- [A15] S. Balibar and F. Caupin. Nucleation of crystals from their liquid phase. *C. R. Phys.*, 2006, **7**, 988-999.
- [A16] F. Caupin and E. Herbert. Cavitation in water: a review. *C. R. Phys.*, 2006, **7**, 1000-1017.
- [A17] H. Cochard, T. Barigah, E. Herbert, and F. Caupin. Cavitation in plants at low temperature: is sap transport limited by the tensile strength of water as expected from Briggs' Z-tube experiment? *New Phytologist*, 2007, **173**, 571-575.
- [A18] F. Caupin. Comment on "Capillary Filling of Anodized Alumina Nanopore Arrays". *Phys. Rev. Lett.*, 2007, **98**, 259601.
- [A19] F. Caupin. Comment on "Large Melting-Point Hysteresis of Ge Nanocrystals Embedded in SiO₂". *Phys. Rev. Lett.*, 2007, **99**, 079601.
- [A20] S. Sasaki, F. Caupin, and S. Balibar. Wetting properties of grain boundaries in solid He-4. *Phys. Rev. Lett.*, 2007, **99**, 205302, 1-4.
- [A21] S. Balibar and F. Caupin. Supersolidity and disorder. *J. Phys.: Condens. Matter*, 2008, **20**, 173201, 1-19.
- [A22] F. Caupin, J. Boronat, and K.H. Andersen. Static structure factor and static response function of superfluid helium 4: a comparative analysis. *J. Low Temp. Phys.*, 2008, **152**, 108-121.
- [A23] F. Caupin. Melting and freezing of embedded nanoclusters. *Phys. Rev. B*, 2008, **77**, 184108, 1-7.
- [A24] F. Caupin, M.W. Cole, S. Balibar, and J. Treiner. Absolute limit for the capillary rise of a fluid. *EPL*, 2008, **82**, 56004, 1-6.
- [A25] F. Caupin, E. Herbert, S. Balibar and M.W. Cole. Comment on "Nanoscale water capillary bridges under deeply negative pressure" [Chem. Phys. Lett. 451 (2008) 88]. *Chem. Phys. Lett.*, 2008, **463**, 283-285.
- [A26] S. Sasaki, F. Caupin, and S. Balibar. Optical Observations of Disorder in Solid Helium 4. *J. Low Temp. Phys.*, 2008, **153**, 43-76.
- [A27] S. Balibar and F. Caupin. Comment on "Observation on unusual mass transport in solid hcp helium 4". *Phys. Rev. Lett.*, 2008, **101**, 189601.
- [A28] K. Davitt, A. Arvengas, and F. Caupin. Water at the cavitation limit: Density of the metastable liquid and size of the critical bubble. *EPL*, 2010, **90**, 16002, 1-6.
- [A29] F. Souris, J. Grucker, J. Dupont-Roc, P. Jacquier, A. Arvengas, and F. Caupin. Time-resolved quantitative multiphase interferometric imaging of a highly focused ultrasound pulse. *Appl. Optics*, 2010, **49**, 6127-6133.
- [A30] K. Davitt, E. Rolley, F. Caupin, A. Arvengas, and S. Balibar. Equation of state of water under negative pressure. *J. Chem. Phys.*, 2010, **133**, 174507, 1-8.
- [A31] A. Arvengas, K. Davitt, and F. Caupin. Fiber optic probe hydrophone for the study of acoustic cavitation in water. *Rev. Sci. Instr.*, 2011, **82**, 034904, 1-8.
- [A32] A. Arvengas, E. Herbert, S. Cersoy, K. Davitt and F. Caupin. Cavitation in Heavy Water and Other Liquids. *J. Phys. Chem. B*, 2011, **115**, 14240-14245.
- [A33] M. El Mekki Azouzi, C. Ramboz, J.-F. Lenain, and F. Caupin. A coherent picture of water at extreme negative pressure. *Nature Physics*, 2013, **9**, 38-41.
- [A34] G. Pallares, M. El Mekki Azouzi, M.A. González, J.L. Aragonés, J.L.F. Abascal, C. Valeriani, and F. Caupin. Anomalies of water at negative pressure. *Proc. Natl. Acad. Sci. USA*, 2014, **111**, 7936-7941.
- [A35] M.A. Gonzalez, G. Menzl, J.L. Aragonés, P. Geiger, F. Caupin, J.L.F. Abascal, C. Dellago and C. Valeriani. Detecting vapour bubbles in simulations of metastable water. *J. Chem. Phys.* 2014, **141**, 18C511.
- [A36] M. El Mekki Azouzi, C.S.P. Tripathi, G. Pallares, V. Gardien, and F. Caupin. Brillouin spectroscopy of fluid inclusions proposed as a paleothermometer for subsurface rocks. *Sci. Rep.*, 2015, **5**, 13168.
- [A37] A. Dehaoui, B. Issenmann, and F. Caupin. Viscosity of deeply supercooled water and its coupling to molecular diffusion. *Proc. Natl. Acad. Sci. USA*, 2015, **112**, 12020-12025.
- [A38] G. Pallares, M.A. Gonzalez, J.L.F. Abascal, C. Valeriani and F. Caupin. Equation of state for water and its line of density maxima down to -120 MPa. *Phys. Chem. Chem. Phys.* 2016, **18**, 5896-5900.

- [A39] N. Bruot and F. Caupin. Curvature dependence of the liquid-vapor surface tension beyond the Tolman approximation. *Phys. Rev. Lett.* 2016, **116**, 056102.
- [A40] P. Gallo, K. Amann-Winkel, C.A. Angell, M.A. Anisimov, F. Caupin, C. Chakravarty, E. Lascaris, T. Loerting, A.Z. Panagiotopoulos, J. Russo, J.A. Sellberg, H.E. Stanley, H. Tanaka, C. Vega, L.M. Xu, L.G.M. Pettersson. Water: A Tale of Two Liquids. *Chem. Rev.* 2016, **116**, 7463-7500.
- [A41] M.A. Gonzalez, C. Valeriani, F. Caupin, J.L.F. Abascal. A comprehensive scenario of the thermodynamic anomalies of water using the TIP4P/2005 model. *J. Chem. Phys.* 2016, **145**, 054505.
- [A42] G. Menzl, M.A. Gonzalez, P. Geiger, F. Caupin, J.L.F. Abascal, C. Valeriani, C. Dellago. Molecular mechanism for cavitation in water under tension. *Proc. Natl. Acad. Sci. USA*, 2016, **113**, 13582-13587.
- [A43] J.W. Biddle, R.S. Singh, E.M. Sparano, F. Ricci, M.A. González, C. Valeriani, J.L.F. Abascal, P.G. Debenedetti, M.A. Anisimov, and F. Caupin. Two-structure thermodynamics for the TIP4P/2005 model of water covering supercooled and deeply stretched regions. *J. Chem. Phys.* 2017, **146**, 034502.
- [A44] L.P. Singh, B. Issenmann, and F. Caupin. Pressure dependence of viscosity in supercooled water and a unified approach for thermodynamic and dynamic anomalies of water. *Proc. Natl. Acad. Sci. USA*, 2017, **114**, 4312-4317.
- [A45] V. Holten, C. Qiu, E. Guillerm, M. Wilke, J. Ricka, M. Frenz, and F. Caupin. Compressibility anomalies in stretched water and their interplay with density anomalies. *J. Phys. Chem. Lett.*, 2017, **8**, 5519–5522.
- [A46] C. Goy, M.A.C. Potenza, S. Dederá, M. Tomut, E. Guillerm, A. Kalinin, K.-O. Voss, A. Schottelius, N. Petridis, A. Prosvetov, G. Tejada, J.M. Fernández, C. Trautmann, F. Caupin, U. Glasmacher, R.E. Grisenti. Shrinking of rapidly evaporating water microdroplets reveals their extreme supercooling. *Phys. Rev. Lett.*, 2018, **120**, 015501.
- [A47] M.A. Anisimov, M. Duška, F. Caupin, L.E. Amrhein, A. Rosenbaum, and R.J. Sadus. Thermodynamics of Fluid Polyamorphism. *Phys. Rev. X*, 2018, **8**, 011004.
- [A48] F. Caupin, V. Holten, C. Qiu, E. Guillerm, M. Wilke, M. Frenz, J. Teixeira, A.K. Soper. Comment on “Maxima in the thermodynamic response and correlation functions of deeply supercooled water”. *Science*, 2018, **360**, eaat1634.
- [A49] P. Montero de Hijes, E. Sanz, L. Joly, C. Valeriani, and F. Caupin. Viscosity and self-diffusion of supercooled and stretched water from molecular dynamics simulations. *J. Chem. Phys.*, 2018, **149**, 094503.

Proceedings of peer-reviewed international conferences

- [B1] S. Balibar, F. Caupin, P. Roche, and H. J. Maris. Quantum cavitation: a comparison between superfluid helium 4 and normal liquid helium 3. Proc. QFS1998 (Amherst). *J. Low Temp. Phys.*, 1998, **113**, 459-471.
- [B2] F. Caupin, P. Roche, S. Marchand, and S. Balibar. Cavitation in normal liquid helium 3. Proc. QFS1998 (Amherst). *J. Low Temp. Phys.*, 1998, **113**, 473-478.
- [B3] F. Caupin and S. Balibar. Search for quantum cavitation in liquid helium 3. Proc. LT22 (Helsinki). *Physica B*, 2000, **284-288**, 212-213.
- [B4] F. Caupin, S. Balibar, and H.J. Maris. The expansion coefficient of liquid helium 3 and the shape of its stability limit. Proc. QFS2001 (Konstanz). *J. Low Temp. Phys.*, 2002, **126**, 73-78.
- [B5] F. Caupin, S. Balibar, and H. J. Maris. Nucleation in a Fermi liquid at negative pressure. Proc. QFS2001 (Konstanz). *J. Low Temp. Phys.*, 2002, **126**, 91-96.
- [B6] X. Chavanne, S. Balibar, and F. Caupin. Heterogeneous cavitation in liquid helium 4 near a glass plate. Proc. QFS2001 (Konstanz). *J. Low Temp. Phys.*, 2002, **126**, 615-620.
- [B7] X. Chavanne, S. Balibar, F. Caupin, C. Appert, and D. d'Humières. Optical measurement of the non-linear focusing of sound in liquid helium 4. Proc. QFS2001 (Konstanz). *J. Low Temp. Phys.*, 2002, **126**, 643-648.

- [B8] S. Balibar and F. Caupin. The limits of stability of liquid helium. *NATO SCIENCE SERIES: II: Mathematics, Physics and Chemistry*. Vol. **84: Liquids Under Negative Pressure**. Ed. A.R. Imre, H.J. Maris, P.R. Williams. Dordrecht, Kluwer Academic Publishers, October 2002, 145-160.
- [B9] F. Caupin and S. Balibar. Quantum statistics of metastable liquid helium. *NATO SCIENCE SERIES: II: Mathematics, Physics and Chemistry*. Vol. **84: Liquids Under Negative Pressure**. Ed. A.R. Imre, H.J. Maris, P.R. Williams. Dordrecht, Kluwer Academic Publishers, October 2002, 201-214.
- [B10] F. Caupin and V. Fourmond. Ultrasonic cavitation in freon at room temperature. *NATO SCIENCE SERIES: II: Mathematics, Physics and Chemistry*. Vol. **84: Liquids Under Negative Pressure**. Ed. A.R. Imre, H.J. Maris, P.R. Williams. Dordrecht, Kluwer Academic Publishers, October 2002, 307-313.
- [B11] T. Ueno, S. Balibar, T. Mizusaki, F. Caupin, M. Fechner and E. Rolley.
Optical measurement of wetting by helium 3-helium 4 mixtures near their tri-critical point. Proc. LT23 (Hiroshima). *J. Low Temp. Phys.*, 2003, **130**, 543-555.
- [B12] F. Caupin, D. O. Edwards and H. J. Maris. Thermodynamics of metastable superfluid helium. Proc. LT23 (Hiroshima). *Physica B*, 2003, **329-333**, 185-186.
- [B13] F. Caupin, S. Balibar and H. J. Maris. Limits of metastability of liquid helium. Proc. LT23 (Hiroshima). *Physica B*, 2003, **329-333**, 356-359.
- [B14] S. Balibar, X. Chavanne and F. Caupin. Very fast growth and melting of helium 4 crystals. Proc. LT23 (Hiroshima). *Physica B*, 2003, **329-333**, 380-381.
- [B15] S. Balibar and F. Caupin. Metastable liquids. Proc. 5th Liquid Matter Conference (Konstanz). *J. Phys.: Condens. Matter*, 2003, **15**, S75-S82.
- [B16] F. Caupin and T. Minoguchi. Density functional theory of freezing of superfluid helium 4. Proc. QFS2003 (Albuquerque). *J. Low Temp. Phys.*, 2004, **134**, 181-186.
- [B17] E. Herbert and F. Caupin. Limit of metastability of water under tension: theories and experiments. Proc. 6th Liquid Matter Conference (Utrecht). *J. Phys.: Condens. Matter*, 2005, **17**, S3597-S3602.
- [B18] F. Caupin and T. Minoguchi. Density functional theory of the interface between solid and superfluid helium 4. Proc. QFS2004 (Trento). *J. Low Temp. Phys.*, 2005, **138**, 331-336.
- [B19] R. Ishiguro, F. Caupin, and S. Balibar. Homogeneous nucleation of solid He-4. Proc. LT24 (Orlando). *AIP Conf. Proc.*, 2006, **850**, 339-340.
- [B20] R. Ishiguro, F. Caupin, and S. Balibar. Homogeneous nucleation of ⁴He crystals by acoustic waves. Proc. QFS2006 (Kyoto). *J. Low Temp. Phys.*, 2007, **148**, 645-652.
- [B21] S. Sasaki, R. Ishiguro, F. Caupin, H.J. Maris, and S. Balibar. Supersolidity and superfluidity of grain boundaries. Proc. QFS2006 (Kyoto). *J. Low Temp. Phys.*, 2007, **148**, 665-670.
- [B22] F. Caupin, F. Ancilotto, M. Barranco, R. Mayol, and M. Pi.
Freezing of helium-4: comparison of different density functional approaches. Proc. QFS2006 (Kyoto). *J. Low Temp. Phys.*, 2007, **148**, 731-736.
- [B23] F. Caupin, S. Sasaki, and S. Balibar. Supersolidity and disorder in solid helium 4. Proc. QFS2007 (Kazan). *J. Low Temp. Phys.*, 2008, **150**, 267-275.
- [B24] F. Caupin, S. Sasaki, and S. Balibar. Absence of grain boundary melting in solid helium. Proc. 7th Liquid Matter Conference (Lund). *J. Phys.: Condens. Matter.*, 2008, **20**, 494228 (1-6).
- [B25] F. Caupin, A. Arvengas, K. Davitt, M. El Mekki Azouzi, K.I. Shmulovich, C. Ramboz, D.A. Sessoms, and A.D. Stroock. Exploring liquids at negative pressure. Proc. 8th Liquid Matter Conference (Vienna). *J. Phys.: Condens. Matter.*, 2012, **24**, 284110 (1-7).
- [B26] F. Caupin, in *Mesostructure and Dynamics in Liquids and Solutions, Faraday Discuss.*, 2013, **167**, *General Discussion*.
- [B27] F. Caupin, Escaping the no man's land: Recent experiments on metastable liquid water. Proc. 7th International Discussion Meeting on Relaxation in Complex Systems. *J. Non-Cryst. Sol.*, 2015, **407**, 441-448.

Invited Talks

1. Workshop Liquid helium in confined geometry, Valencia, Spain, Feb. 1999:
Quantum cavitation: a comparison between helium 4 and helium 3.
2. Workshop Liquids under negative pressure, Budapest, Hungary, Feb. 2002:
Cavitation in liquid helium and quantum statistics at negative pressure.
3. 23rd conference on Low Temperature Physics, Hiroshima, Japan, Aug. 2002:
Limits of stability of liquid helium.
4. Quantum Fluids and Solids conference, Kazan, Russia, Aug. 2007: *Supersolidity and disorder.*
5. 7th conf. Liquid Matter, Lund, Sweden, June 2008: *Absence of grain boundary melting in solid helium.*
6. Supersolids conference, Les Treilles, France, July 2008:
Wetting properties of grain boundaries in solid helium 4.
7. Supersolids conference, ICTP, Trieste, Italy, Aug. 2008:
Optical investigations of disorder in solid helium 4.
8. Final conference of the European network on Arrested Matter, Taormina, Italy, Nov. 2008:
Stretched water: another "no man's land"?
9. Annual meeting of the German and Dutch acoustical societies, Rotterdam, The Netherlands, March 2009: *Acoustic cavitation in water.*
10. 6th International Discussion Meeting on Relaxations in Complex Systems, Roma, Italy, Sept. 2009:
Cavitation in water: a "no man's land" at negative pressure.
11. Workshop on Fluctuation-induced Forces in Condensed Matter, Max-Planck Institut, Dresden, Germany, Oct. 2010: *The range of forces and the melting of polycrystals.*
12. 8th conf. Liquid Matter, Vienna, Autriche, Sept. 2011: *Exploring liquids at negative pressure.*
13. EUROMECH Colloquium 536, *Nanobubbles and micropancakes*, Les Houches, France, Feb. 2012:
Nucleation of vapor bubbles in bulk water.
14. CECAM Workshop, *New insights on simulations, theory and experiments in supercooled water*, Lausanne, Switzerland, July 2013: *Water anomalies at -120 MPa.*
15. 7th International Discussion Meeting on Relaxation in Complex Systems, Barcelona, Spain, July 2013:
Metastable water: escaping the no man's land.
16. WaterEurope, Interdisciplinary conference about water, Zaragoza, Spain, June 2014:
Recent experiments on metastable water.
17. EMLG-JMLG Conference *Molecular liquids and soft matter: from fundamentals to applications*, Roma, Italy, Sept. 2014: *New insights on the properties of supercooled water and solutions.*
18. International conference of the Nordita workshop *Water – the Most Anomalous Liquid*, Stockholm, Sweden, Oct. 2014: *Recent measurements on bulk supercooled water: equation of state at negative pressure, and viscosity at positive pressure.*
19. Roma Tre Workshop: *Water under extreme conditions*, Rome, Italy, June 2015:
Viscosity of supercooled water and its coupling to microscopic diffusion.
20. Lorentz Center International Workshop: *Liquid fragmentation in Nature and Industry*, Leiden, The Netherlands, June 2015: *Bubble and droplet nucleation experiments to test models of curvature effects on surface tension*
21. Annual meeting of the International Association for the Properties of Water and Steam (IAPWS), Dresde, Allemagne, Sept. 2016: *How I met your water (Helmholtz Award Lecture).*
22. Roma Tre Workshop: *Water under extreme conditions*, Rome, Italy, June 2017:
Reduction of viscosity by pressure in supercooled water.
23. WaterX, La Maddalena, Italy, June 2018.
Thermodynamic certainties and two-state speculations about the anomalies of water.

Other communications

Talk in conferences

1. 6^e Journées de la Matière Condensée, Grenoble, France, Aug. 1998:
Quantum cavitation in liquid helium 3?
2. Journées de Physique Statistique, Paris, France, Jan. 2001:
Cavitation dans l'hélium 3: un liquide de Fermi à pression négative.
3. Quantum Fluids and Solids conference, Konstanz, Germany, July 2001:
The expansion coefficient of liquid helium 3 and the shape of its stability limit.
4. 6th conference on Liquid Matter, Utrecht, The Netherlands, July 2005:
Limit of metastability of water under tension: theories and experiments.
5. 23rd conference on Statistical Physics, Genova, Italy, July 2007:
Cavitation and equation of state in water at negative pressure.
6. Symposium in honor of Robin. J. Speedy, Wellington, New-Zeland, July 2010 :
From water to helium (and back): the impact of Robin Speedy on quantum liquids.
7. 24th conference on Statistical Physics, Cairns, Australia, July 2010 :
Anomalous liquid to vapor nucleation in water.
8. 26th conférence Statistical Physics, Lyon, July 2016 :
Two-state interpretation of thermodynamic and dynamic properties of water and water-like models.
9. WaterSpain, Saragosse, Espagne, July 2017: *Anomalies in the viscosity of supercooled water.*
10. 20th International Symposium on Thermophysical Properties, Boulder, USA, July 2018.
Transport properties of stable and supercooled water: two-state analysis of experiments and simulations.
11. 17th International Conference on the Properties of Water and Steam, Prague, Czech Rep., Sept. 2018.
Equation of state of water at negative pressure and relations between lines of thermodynamic anomalies.

Seminars

1. Ecole Supérieure de Physique et de Chimie Industrielle, Paris, June 1999:
Cavitation dans l'hélium liquide.
2. Kyoto University, Japan, Sept. 2002: *Limits of stability of liquid helium.*
3. Advanced Light Source, Berkeley, California, USA, July 2003:
Nucleation in helium: swinging from liquid to gas and solid.
4. Tokyo University, Japan, April 2003:
Search for homogeneous crystallization of superfluid helium 4.
5. Kyoto University, Japan, April 2003:
Search for homogeneous crystallization of superfluid helium 4.
6. Service de Physique de l'Etat Condensé, CEA, Saclay, France, Feb. 2008:
Supersolidité, désordre et joints de grains.
7. Department of Fundamental Physics, Barcelona University, Spain, Sept. 2009:
Pulling on water: liquid density at the acoustic cavitation limit.
8. Institut de Chimie Physique et Matériaux, Université Paul Verlaine, Metz, Nov. 2009:
Tirer sur l'eau : densité du liquide à la limite de cavitation acoustique.
9. Physics Department, Saarlands Universität, Germany, Nov. 2009:
Pulling on water: liquid density at the acoustic cavitation limit.
10. Colloquium at the Physics Department, Ecole Normale Supérieure, Paris, Jan. 2010:
Tirer sur l'eau : cavitation et anomalies.
11. School of Chemical and Biomolecular Engineering, Cornell University, USA, Nov. 2011:
Exploring liquids at negative pressure.
12. Laboratoire Physique de la Matière Condensée, Université Nice Sophia Antipolis, Nice, Jan. 2012:
Les étranges propriétés de l'eau métastable.
13. Colloquium at Laboratoire Charles Coulomb, Université Montpellier II, Montpellier, March 2012:
Les anomalies de l'eau à pression négative : cavitation et mesures thermodynamiques.

14. Service de Physique de l'Etat Condensé, CEA, Saclay, June 2012:
Les étranges propriétés de l'eau métastable.
15. Ecole Normale Supérieure de Lyon, Lyon, Nov. 2012: *Les mystères de l'eau.*
16. Day in honour of Sébastien Balibar, Ecole Normale Supérieure, Paris, Jan. 2013 : *Les mystères de l'eau.*
17. Institut de Minéralogie et de Physique des Milieux Condensés, Université Pierre et Marie Curie, mars 2013 : *Anomalies de l'eau surfondue à -100 MPa.*
18. Vienna Computational Materials Laboratory, Université de Vienne, mai 2013:
Water anomalies at -100 MPa.
19. Séminaire Matière Molle et Complexe, Institut de Physique de Rennes, Université de Rennes 1, Rennes, mai 2013 : *Anomalies de l'eau surfondue à -100 MPa.*
20. Departamento Química Física i Facultad de Ciencias Químicas of the Universidad Complutense de Madrid, mars 2014 : *Recent experiments on metastable water.*
21. Institut de Recherche sur les Systèmes Atomiques et Moléculaires Complexes, Université Paul Sabatier, Toulouse, April 2014 : *Expériences récentes sur l'eau métastable.*
22. Laboratoire de Physique de la Matière Condensée, Ecole Polytechnique, Palaiseau, June 2016:
Secrets of water : new insights from experiments on the metastable liquid.
23. Journée Scientifique de la Fédération des Sciences et Technologies, Université Claude Bernard Lyon 1, juin 2016: *Les mystères de l'eau.*
24. Group of C.M. Casciola, Università la Sapienza, Preci, Italie, July 2016:
Is water two faced? Viscosity of supercooled water.
25. Laboratoire Matériaux et Phénomènes Quantiques, Université Paris Diderot, May 2017:
Tracking the anomalies of water in the metastable regions.

Lectures out of my university

1. Series of 3 lectures C.M. Casciola's group, Università la Sapienza, Preci, Italie, 2016:
A brief history of cavitation; How to measure negative pressure ?; Cavitation in nature and technology.

Popularizing science talks

1. Popularizing science talk at Espace des Sciences de Paris, Ecole Supérieure de Physique et Chimie Industrielle, Paris, France, Sept.2003: *Bulles : son et lumière.*
2. Popularizing science talk for the Physics Olympiads, Université Claude Bernard Lyon 1, Dec. 2011 :
L'eau dans tous ses états.

Poster presentations

1. Quantum Fluids and Solids conference, Amherst, Massachusetts, June 1998:
Cavitation in normal liquid helium 3.
2. 22nd conference on Low Temperature Physics, Helsinki, Finland, Aug. 1999:
Search for quantum cavitation in liquid helium-3.
3. Quantum Fluids and Solids conference, Minneapolis, Minnesota, USA, June 2000:
Pressure dependence of acoustic cavitation in liquid helium.
4. Quantum Fluids and Solids conference, Konstanz, Germany, July 2001:
The expansion coefficient of liquid helium 3 and the shape of its stability limit.
5. Quantum Fluids and Solids conference, Albuquerque, New Mexico, USA, Aug. 2003:
Density functional theory of freezing of superfluid helium 4.
6. Quantum Fluids and Solids conference, Trento, Italy, July 2004:
Density functional theory of the interface between solid and superfluid helium 4.
7. Quantum Fluids and Solids conference, Kyoto, Japan, Aug. 2006:
Freezing of helium 4: comparison of different density functional approaches and Critical review of the data on static response function of helium 4.

8. Gordon Research Conference Water and aqueous solutions, Holderness, New Hampshire, USA, July 2008: *Equation of state of water at negative pressure.*
9. 25th conference on Low Temperature Physics, Amsterdam, The Netherlands, Aug. 2008: *Static structure factor and static response function of superfluid helium 4: a comparative analysis.*
10. Gordon Research Conference Water and aqueous solutions, Holderness, New Hampshire, USA, August 2012: *Thermodynamics and kinetics of water at negative pressure.*
11. Faraday Discussion 167: Mesostructure and dynamics in liquids and solutions, Bristol, England, Sept. 2013: *Experiments at negative pressure to probe nanoscale structures in water.*
12. 10th Liquid Matter Conference, Ljubljana, Slovénie, juill. 2017: *Liquid polyamorphism driven by interconvertible states in a single-component fluid.*
13. 17th International Conference on the Properties of Water and Steam, Prague, Czech Rep., Sept. 2018. *Viscosity and self-diffusion of supercooled and stretched water from molecular dynamics simulations.*

Institutional media

1. [De l'eau à des pressions négatives de -1000 fois la pression atmosphérique.](#)
Actualité Institut de Physique du CNRS, 5 December 2012.
2. [Une collaboration entre physiciens et géologues débouche sur un nouvel outil pour reconstruire le paléoclimat.](#)
Communiqué de presse Université Claude Bernard Lyon 1 – CNRS, 28 August 2015.
3. [L'eau surfondue s'écoule deux fois plus vite à forte densité.](#)
Actualité Institut de Physique du CNRS, 26 September 2017.

With journalists and other media coverage

1. J. Bourdet, [Les 10 grandes énigmes de la physique : les mystères de l'eau](#), *Journal du CNRS*, n°181, Feb. 2005.
2. Fantômes, qu'en pense la science ? (where I contributed about supersolid helium!), *Science et Vie Junior*, HS n°204, Sept. 2006.
3. F. Caupin, [Lorsque je mets du thé dans de l'eau chauffée au micro-ondes, l'eau jaillit. Pourquoi ?](#), *La Recherche*, n°415, Jan. 2008.
4. A. Debroyse, [10 questions sur H₂O](#), *Science et Vie Junior*, HS n°96, Oct. 2012.
5. Ph. Pajot, [Eau : Elle se met dans de drôles d'états](#), *Science et Avenir*, HS n°172, Oct-Nov. 2012.
6. D. Larousserie, [L'eau plonge les physiciens dans tous leurs états](#), *Le Monde*, 19 May 2014 and *Le Temps*, 21 May 2014.
7. [Editorial](#) (Debated waters, *Nature Mat.*, 2014, **13**, 663) and [News and Views](#) (C.A. Angell, Two phases?, *Nature Mat.*, 2014, **13**, 673-675) of Nature Materials discussing G. Pallares, M. El Mekki Azouzi, M.A. González, J.L. Aragonés, J.L.F. Abascal, C. Valeriani, and F. Caupin. Anomalies of water at negative pressure. *Proc. Natl. Acad. Sci. USA*, 2014, **111**, 7936-7941.
8. M. Fontez, [Médecines alternatives : celles qui marchent, celles qui ne marchent pas](#) (about homeopathy), *Science et Vie*, n°1168, Jan. 2015.
9. Commentary by D. Lohse and A. Prosperetti, [Homogeneous nucleation: patching the way from the macroscopic to the nanoscopic description](#), *Proc. Natl. Acad. Sci. USA*, 2016, **113**, 13549-13550, about G. Menzl, M.A. Gonzalez, P. Geiger, F. Caupin, J.L.F. Abascal, C. Valeriani, C. Dellago. Molecular mechanism for cavitation in water under tension. *Proc. Natl. Acad. Sci. USA*, 2016, **113**, 13582-13587.
10. [An interview with: Professor Frédéric Caupin](#), Linkam Scientific, Sept. 2016.
11. S. Tesh, [Pressure helps supercooled water flow](#), *Flash Physics* (News from *Physics World*), 12 April 2017.
12. Ph. Ball, in the entry dated Monday June 19, 2017 of his blog "[Water in Biology](#)", cites L.P. Singh, B. Issenmann, and F. Caupin. Pressure dependence of viscosity in supercooled water and a unified approach for thermodynamic and dynamic anomalies of water. *Proc. Natl. Acad. Sci. USA*, 2017, **114**, 4312-4317.

13. [Spotlights](#) of *J. Phys. Chem. Lett.*, Vol. **8**, Issue 22 (2017) about V. Holten, C. Qiu, E. Guillerm, M. Wilke, J. Ricka, M. Frenz, and F. Caupin. Compressibility anomalies in stretched water and their interplay with density anomalies. *J. Phys. Chem. Lett.*, 2017, **8**, 5519–5522.
14. Anne Debroise, [L'eau peut rester liquide jusqu'à... -42.5 °C !](#), *Science et Vie*, 22 Dec. 2017.
15. Z. Sfez, [L'eau serait en fait composée de deux phases liquides distinctes !](#), *Journal des Sciences, France Culture*, 5 Jan. 2018.
16. D. Larousserie, [Guerre de l'eau chez les physiciens](#), *Le Monde*, 16 Jan. 2018.
17. F. Ollagnier, [De l'eau liquide à -42 °C](#), *Sciences et Avenir*, 22 février 2018.