

CURRICULUM VITAE

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Birthdate 19 october 1979

French citizenship

**Education**

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- 2002 - 2005**      **Ph.D in Physics**, University of Rennes (France), under the supervision of Dr. Alexandre Valance.  
Defended on 9th of december 2005 in Rennes, obtained with honours.  
Members of the jury : Mr. Francois Charru, Philippe Davy, John Hinch, Jean-Pierre Hulin, Alexandre Valance, José-Eduardo Wesfreid.
- 2002                3<sup>rd</sup> year of MSM (**Master of physics**) at ÉNS Lyon.  
DEA (**Master's degree**) in Statistical and nonlinear Physics.
- 2000-2001        1<sup>st</sup> and 2<sup>nd</sup> years of MSM (**Bachelor's degree**) in physics, with honours.
- 1999                Admitted and hired as "normalien" at the École normale supérieure de Lyon on a physics/chemistry nationwide competitive exam.
- 1996-1999        Classes préparatoires (Lycée du Parc, Lyon) in Mathematics, Physics and Chemistry (program leading to nationwide competitive exams).

**Research**

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- 2009-present**      **Maître de Conférences** (assistant professor),  
Department of Earth Sciences, University of Lyon (France).
- 2008**                **Post-doc**, with Pr. T. Bohr and Pr. T. Kiørboe, *Fluid dynamics of animal locomotion*, Technical University of Denmark.
- 2006-2007**        **Post-doc**, *Rheology of liquid foams*, with Pr. D. Weaire and Dr. S. Hutzler, Trinity College Dublin (Ireland).
- 2002 - 2005**        **Ph.D in Physics**, *Instability of a granular bed sheared by a fluid flow*, under the supervision of Dr. A. Valance, University of Rennes (France)
- April–July 2002    *Experimental study of the dynamics of sand ripples under water*, internship at GMC (Condensed Matter and Materials Group), Rennes (France), under the supervision of Dr. A. Valance.
- May–July 2001     *Numerical study of the influence of the Prandtl number on mantle convection*, internship at Institute of Geophysics, Münster (Germany), under the supervision of Pr. U. Hansen.
- June–July 2000    *Theoretical study : properties of a galactical halo composed of white dwarfs*, internship at CRAL (Research Center in Astronomy), Lyon (France), under the supervision of Pr. G. Chabrier.

## Teaching

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- 2009-** **Assistant Professor at the university of Lyon / ENS Lyon.**  
Introduction to Geophysics (undergraduate level).  
Gravimetry (undergraduate level).  
Fluid mechanics for geosciences (undergraduate level).  
Geotechnics for Risk and Environmental management (master course).  
Sediment transport and sedimentary structures (master course).
- 2006–2007** **Teaching Assistant at Trinity College Dublin.**  
Physics lab and tutorials (undergraduate level).
- 2003–2005** **Teaching Assistant at University of Rennes.**  
Physics Lab (electronics, fluid mechanics).  
Lectures / tutorial classes in mechanics, thermodynamics, fluid mechanics, physics for biology (undergraduate level).
- 2003-2009 Publication of exam corrections (H&K editions).

Science popularization : Participation to science festivals, lab visits and experiments for children.

## Skills

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### Computer

- Languages : C, fortran, L<sup>A</sup>T<sub>E</sub>X, html, OpenGL.  
DEM simulations (Molecular Dynamics), finite-differences simulations.
- Finite elements modelization : Comsol (Femlab), FreeFEM.
- OS : Linux/Unix, Windows.
- Others : Maple, Mathematica.

### Experimental techniques

- Fluid mechanics :  
Experimental flumes.  
P.I.V. (Particle Image Velocimetry) measurements.  
Ultrasonic Doppler anemometry.
- Image processing : Visilog, Aphelion, imageJ.

### Misc.

Scientific referee for Phys. Rev. Lett., Phys. Rev. E., Eur. Phys. J. E, Coll. Surf. A., Langmuir, E.P.S.L., Science.

## Languages

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|--------------------|-------------------------------------|
| French :           | mother tongue.                      |
| English :          | fluent (2 years in Ireland).        |
| German :           | fluent (several months in Germany). |
| Spanish, Chinese : | beginner.                           |

## List of Publications

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### Articles in peer-reviewed journals

1. T. Kiørboe, A. Andersen, **V.J. Langlois**, H.H. Jakobsen, Unsteady motion : Escape jumps in planktonic copepods, their kinematics and energetics, *J. Roy. Soc. Interface*, **7** : 1591-1602 (2010).
2. T. Kiørboe, A. Andersen, **V.J. Langlois**, H.H. Jakobsen, T. Bohr, Mechanisms and feasibility of prey capture in ambush feeding zooplankton, *P.N.A.S* **106** : 12394-12399 (2009).
3. **V.J. Langlois**, A. Andersen, T. Bohr, A. Wisser, T. Kiørboe, Significance of swimming and feeding currents for nutrient uptake in osmotrophic and interception feeding flagellates, *Aquat. Microb. Ecol.* **54** : 35-44 (2009).
4. **V.J. Langlois**, S. Hutzler, D. Weaire, Rheological properties of the soft disk model for 2D foams, *Phys. Rev. E* **78** : 021401 (2008).
5. D. Weaire, S. Hutzler, **V.J. Langlois**, R.J. Clancy, Velocity dependence of shear localization in a 2D foam, *Philos. Mag. Lett.* **88** : 387-396 (2008).
6. **V. Langlois** & A. Valance, Formation and evolution of current ripples on a flat sand bed under turbulent water flow, *Eur. Phys. J. E*, **22** : 201-208 (2007).
7. **V. Langlois** & A. Valance, Three-dimensionality of sand ripples under a laminar shear flow, *J. Geophys. Res.*, **110** : F04S09 (2005).
8. **V. Langlois** & A. Valance, Two-dimensional sand ripples under Continuous Laminar Shear Flow, *Phys. Rev. Lett.*, **94** : 248001 (2005).
9. A. Valance & **V. Langlois**, Ripple formation over a sand bed submitted to a laminar shear flow, *Eur. Phys. J. B*, **43** : 283-294 (2005).

### Book chapters

10. D. Weaire, **V. Langlois**, M. Saadatfar, S. Hutzler, Foam as granular matter, *in* Granular and complex materials, eds. T. Aste, T. Di Matteo, A. Tordesillas, World Scientific Publishing (2007).

### Peer-reviewed proceedings

11. D. Weaire, S. Hutzler, **V.J. Langlois**, Foam rheology in two dimensions, *XVth International Congress on Rheology* (Monterey 2008).
12. **V. Langlois** and A. Valance, Three-dimensional sand patterns under shear flow, *Powders and Grains 2005* (Stuttgart, Germany).
13. **V. Langlois** and A. Valance, 2D and 3D stability analysis of sand ripple formation, *MARID 2004* (Twente, the Netherlands).

### Miscellaneous

- *Pourquoi le ciel est-il bleu ?*, Prépa Magazine 4 (october 2008).
- Contributions to published exam corrections (collective books, H&K eds., 2003-2009).

## Scientific communications

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### International conferences

- June 2012 Soft matter physics and solid earth sciences : unifying concepts (Tokyo, Japan).  
*Rupture, collapse and flow of a brittle granular column.*
- January 2012 Dissipative Rheology of Foams CECAM Workshop (Dublin, Ireland).  
*2D foam in a Poiseuille flow : effect of the walls.*
- December 2011 American Geophysical Union Fall Meeting (San Francisco, USA).  
*Failure and collapse of a brittle granular column (poster).*
- July 2010 Franco-Japanese Joint Seminar : Deformation, Flow and Rupture of Soft Matter (Lyon, France).  
*The rheology of two-dimensional foams.*
- Mai 2010 European Geosciences Union (Vienna, Austria).  
*Numerical simulations of bedload sediment transport.*
- April 2009 5th Annual European Rheology Conference (Cardiff, UK).  
*Simulations of flow localization in 2D foams.*  
*Rheology of 2D foams.*
- January 2009 IMA Dense Granular Flows (Cambridge, UK).  
*Foam as a soft granular material*
- November 2008 APS DFD Annual Meeting (San Antonio, USA).  
*Can unicells increase their nutrient uptake by swimming ?*
- August 2008 DynaSoft 2008 (Cargèse, France).  
*Rheology of 2D foams (poster).*
- July 2008 EuFoam Conference (Noordwijk, Netherlands).  
*Recent progress in 2D foam rheology (poster).*
- February 2008 Colloidal Suspensions, Granular Media, Foams, and Complex Plasmas (Leiden).  
*A numerical approach to foam rheology.*
- January 2008 Workshop on Foam Mechanics (Grenoble).  
*Rheology and shear-banding in 2D foams : the soft-disk model.*
- August 2007 Complex motion in fluids summer school (Krogerup, Denmark).  
*Sediment transport in a laminar flow (poster).*
- July 2007 StatPhys 2007 : Granular media and colloidal suspensions (Naples, Italy).  
*Sediment transport in a laminar flow (poster).*  
*Wet foam as soft granular medium : bubbles in a rotating drum (poster).*
- June 2006 DyGraM 2006 : Jamming, rheology and instabilities (Rennes, France).  
*Long-time evolution of sand ripples.*
- June 2005 Granular matter Symposium (Reggio di Calabria, Italy).  
*Linear and nonlinear stability analysis of 3D sand ripple formation.*
- July 2005 Powders and Grains 2005 (Stuttgart, Germany).  
*Linear and nonlinear stability analysis of 3D sand ripple formation (poster).*
- June 2004 Gordon Research Conference : Granular and Granular-fluid flows (Colby College).  
*Dynamics of ripples and sand piles under steady flow - experimental study (poster).*
- April 2004 International workshop MARID 2004 (Universiteit Twente, Netherlands)  
*Ripple formation under a steady flow : 2D and 3D stability analysis.*
- June 2004 International workshop on Dune formation and migration (Carré-le-Rouët).  
*3D patterns under steady unidirectional flow.*
- October 2003 Newton Institute : Geophysical granular and particle-laden flows (Bristol, U.-K.).  
*Instability of a granular bed sheared by a steady flow (poster).*

## Seminars and meetings

May 2011	French workshop on sediment transport (Clermont-Ferrand, France).
October 2010	Invited seminar, Séminaire Rhône-Alpin de Modélisation du Vivant (Lyon).
June 2010	Invited seminar, ENS Paris.
November 2009	French workshop on sediment transport (Roscoff, France).
November 2008	French workshop on foams, Dourdan-la-Forêt (France).
October 2008	French workshop on statistical physics, ENS Lyon (France).
April 2008	Invited seminar, Institut d'Alembert (Paris).
March 2008	Invited seminar, DTU Fluid Center (Lyngby).
October 2007	Invited seminar, GRASP, Liège (Belgium).
June 2007	Invited seminar, Technical University of Denmark (Copenhagen).
January 2007	Invited seminar, Institut d'Alembert, (Paris, France).
January 2006	Invited seminar, Géosciences Rennes (France).
October 2005	Invited seminar, Trinity College, Dublin (Ireland).
June 2005	French workshop in granular physics (Carry-le-Rouët, France).
July 2003	General meeting of the French Physics Society (Lyon, France).
August 2002	French workshop in granular physics (Roscoff, France).