

# Gaby Launay

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26 years old

## Current situation : TA at the LMFA of Lyon (France)

Research interest on chaos theory applied to acoustic-driven cavity flows.

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## Research experiences

### 2016–today **Research assistant.**

*Non-linear dynamics theory applied to the transition to chaos of acoustic-driven cavity flows.*

**Laboratory** : Dept. of complex fluids and transfer, LMFA, Lyon, France.

### 2013–2016 **PhD in fluid mechanics.**

*Interaction between a free-surface flow and an emerging obstacle : Experimental study of the evolution of the structure and dynamics of the horseshoe vortex.*

Defended the 17th November 2016 at the “Ecole Centrale of Lyon” (France).

**Laboratory** : LMFA, Lyon, France

**Jury members** : Pr. Jacques Boree, *Reporter, President*

Pr. Lionel Schouveiler, *Reporter*

Ass. Pr. Hélène Roux, *Examiner*

Ass. Pr. Emmanuel Mignot, *Examiner*

Pr. Richard Perkins, *Advisor*

Pr. Nicolas Rivière, *Co-advisor*

### 2012–2013 **Master internship in fluid mechanics.**

*Experimental study of the properties of a shear thinning fluid in HIT (Homogeneous and Isotropic Turbulence) by PIV (Particle Image Velocimetry).*

**Laboratory** : LMFA, Lyon, France.

**Supervisor** : Pr. Serge Simoens

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## Academic background

### 2012–2013 **Master degree in fluid mechanics, UCBL (Claude Bernard University of Lyon).**

**Courses** : Flow stability, experimental methods (PIV, hot wire, LDA), turbulence, statistical and physical mechanics and numerical fluid mechanics.

### 2011–2012 **Internship in numerical development, 6 months.**

*Implementation of a turbulence model in an innovative CFD code (Finite pointset method).*

Company : ESI Group, Lyon, France.

### 2008–2013 **Mechanical engineer, INSA (National Institute of Applied Sciences), Lyon.**

2008 **Scientific high school degree.**

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## Teaching experience

2016–2017 **Teacher assistant in fluid mechanics, INSA, Lyon.**

*Master level :*

144h of laboratory (head loss, centrifugal pump, debit measurement)

96h of tutorials (fluid static and kinematic, NS equations, notions of turbulence, turbo-machinery, boundary layer)

2013–2016 **Teaching in fluid mechanics, INSA, Lyon.**

*Master level :* 92h of practical work, 44h of tutorials

*Bachelor level :* 56h of engineering projects (as supervisor)

2013–2016 **Hydraulic technician training.**

*Technician from EDF company :*

40h of practical work (debit measurement, head loss, Bernoulli equation)

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## Supervising

2016–2017 **Master degree internship.**

*Chaotic mixing on acoustic-driven cavity flows.*

Co-directed by Pr. Florence Raynal.

2014–2015 **Master degree internship.**

*Super-critical flow around emerging obstacles.* (Associated publication below)

Co-directed by Pr. Nicolas Rivière.

2013–2014 **Supervision of a TIPE (supervised personal work of initiative).**

*Validation of velocity profiles measured on a developing boundary layer.*

Project of a student in preparatory class.

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## Communications

### International communications

- Mignot, E., W. Cai, **G. Launay**, N. Riviere, and C. Escauriaza.  
Coherent Turbulent Structures at the Mixing-Interface of a Square Open-Channel Lateral Cavity. *Physics of Fluids* 28, n° 4 (2016) : 045104.
- Rivière N., G. Vouaillat, **G. Launay** and E. Mignot.  
Emerging Obstacles in Supercritical Open-Channel Flows : Detached Hydraulic Jump versus Wall-Jet-Like Bow Wave. *Journal of Hydraulic Engineering*, 2017, 04017011.

### Submitted communications

- Launay, G., E. Mignot, N. Riviere and R. Perkins.  
**On the laminar horseshoe vortex around an emerging obstacle : Experimental investigation of the regime transitions.** Submitted to “*Journal of Fluid Mechanics*”.
- Launay, G., E. Mignot and N. Riviere.  
**Laminar free-surface flow around emerging obstacles : Impact of the obstacle elongation.** Submitted to “*Physics of Fluids*”.

### Conferences

- Launay, G., E. Mignot and N. Riviere.  
**Flow around emerging obstacles : Experimental study of the laminar horseshoe vortices dynamic.**  
*11th European fluid mechanics conference, 12th to 16th september 2016, Seville, Spain.*
- Launay, G., E. Mignot and N. Riviere.  
**Interaction between a free-surface flow and an emerging obstacle : Experimental study of the horseshoe vortex structure**  
*22th French congress of mechanics, 24th to 28th august 2015, Lyon, France.*

## Seminaries and presentations

Feb. 2016 *Invited speaker at the LEGI, Grenoble, France.*

Nov. 2014 *Internal seminar at the LMFA.*

Oct. 2014 *Invited speaker for the Runoff and thin-films research group (GDR).*

Mars 2014 *Invited speaker at the LEGI.*

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## Skills

French Native language

English Read, spoken, written (TOEIC : 920)

Experimental Laser velocimetry (PIV), Velocimetry by fluorescence (FPIV), Velocimetry acoustic by Doppler effect

Data Non-linear time series analysis, Coherent structures detection, Image analysis, Complex analysis data visualization, Statistical analysis

Languages Python, Matlab, C++, ELisp

Publishing Emacs, Latex, Inkscape (vectorial drawing), Gimp, Matplotlib.