

Curriculum Vitæ

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French Citizen.

Born October 25, 1983.

EDUCATION

2008-2011 : Ph.D. Thesis in Applied Mathematics at École Normale Supérieure de Paris.
Internal waves in oceanography and photonic crystals : a mathematical approach.
Under the supervision of David Lannes.

2007-2008 : Master Degree in Applied Mathematics at Université Bordeaux 1.

2006-2007 : Passed the Agrégation de Mathématiques.

2004-2008 : Student at the École Normale Supérieure de Lyon.

EMPLOYMENT HISTORY

Jan. 2013- ... : Chargé de Recherche CNRS
Institut de Recherche Mathématique de Rennes, France.

July '11-Dec. '12 : Chu Assistant Professor of Applied Mathematics
Department of Applied Physics and Applied Mathematics, Columbia University, New York.

February 2011 : Staff Associate
Department of Applied Physics and Applied Mathematics, Columbia University, New York.

Jan.-June 2008 : Visiting Masters Student
Department of Applied Physics and Applied Mathematics, Columbia University, New York.
Scattering in random media.

Feb.-Aug. 2006 : Visiting Masters Student
University of Freiburg (Germany).
The multiscale finite element method.

June-Aug. 2005 : Visiting Masters Student
Université Lille 1 (France).
Road traffic modeling.

PUBLICATIONS

- [1] *Asymptotic shallow water models for internal waves in a two-fluid system with a free surface*, SIAM J. Math. Anal. **42**(5), pp. 2229–2260 (2010). [doi](#)
- [2] (with J. Marzuola et M.I. Weinstein) *Wave operator bounds for 1–dimensional Schrödinger operators with singular potentials and applications*, J. Math. Phys., **52** (2011). [doi](#)
- [3] *Boussinesq/Boussinesq systems for internal waves with a free surface, and the KdV approximation*, M2AN Math. Model. Numer. Anal., **46**, pp. 145–185 (2012). [doi](#)
- [4] (with M.I. Weinstein) *Scattering, homogenization and interface effects for oscillatory potentials with strong singularities*, Multiscale Model. Simul., **9**, pp. 1017–1063 (2011). [doi](#)
- [5] *Asymptotic models for the generation of internal waves by a moving ship, and the dead-water phenomenon*, Nonlinearity, **24**, pp. 2281–2323 (2011). [doi](#)
- [6] (with I. Vukićević and M.I. Weinstein) *Scattering and localization properties of highly oscillatory potentials*, Comm. Pure Appl. Math. **67**(1), pp. 83–128 (2014). [doi](#)
- [7] *Decoupled and unidirectional asymptotic models for the propagation of internal waves*, Math. Models Methods Appl. Sci. **24**(01), pp. 1–65 (2014). [doi](#)
- [8] (with I. Vukićević and M.I. Weinstein) *Homogenized description of defect modes in periodic structures with localized defects*, Commun. Math. Sci. **13**(3), pp. 777–823 (2015). [doi](#)
- [9] (with S. Israwi and R. Talhouk) *A new fully justified asymptotic model for the propagation of internal waves in the Camassa-Holm regime*, SIAM J. Math. Anal. **47**(1), pp. 240–290 (2015). [doi](#)
- [10] *On the rigid-lid approximation for two shallow layers of immiscible fluids with small density contrast*, J. Nonlinear Sci. **24**(4), pp. 579–632 (2014). [doi](#)
- [11] (with N. Raymond) *Spectral asymptotics of a broken δ -interaction*, J. Phys. A: Math. Theor., **47** (2014). [doi](#)
- [12] (with I. Vukićević and M.I. Weinstein) *Oscillatory and localized perturbations of periodic structures and the bifurcation of defect modes*, SIAM J. Math. Anal., **47**(5), pp. 3832–3883 (2015). [doi](#)
- [13] (with S. Israwi and R. Talhouk) *A new class of two-layer Green-Naghdi systems with improved frequency dispersion*. Stud. Appl. Math., **137**(3), pp. 356–415 (2016). [doi](#)
- [14] *The multilayer shallow water system in the limit of small density contrast*. Asymptot. Anal., **98**(3), pp. 189–235 (2016). [doi](#)
- [15] (with N. Raymond) *Spectral asymptotics for the Schrödinger operator on the line with spreading and oscillating potentials*, Doc. Math., **23**, pp. 599–636 (2018). [doi](#)
- [16] (with S. Israwi) *Well-posedness of the Green-Naghdi and Boussinesq-Peregrine systems*, Ann. Math. Blaise Pascal, **25**(1), pp. 21–74 (2018).
- [17] (with D. Nilsson and E. Wahlén) *Solitary wave solutions to a class of modified Green-Naghdi systems*, J. Math. Fluid Mech. (2017). [doi](#)

PREPRINTS

- [18] *Rigorous justification of the Favrie-Gavrilyuk approximation to the Serre-Green-Naghdi model*. Preprint available [here](#).

- [19] (with L. M. Rodrigues) *Large-time asymptotic stability of Riemann shocks of scalar balance laws*. Preprint available [here](#).

PROCEEDINGS

- [a] (with S. Israwi and R. Talhouk) *Shallow water asymptotic models for the propagation of internal waves*, *Discrete Contin. Dyn. Syst. Ser. S* **7**(2), pp. 239–269 (2014). [doi](#)

TEACHING

Nov. 2017–Feb. 2018 : ENS Rennes

Semigroup theory and linear evolution equations

Reading group, master's level.

Sept.–Nov. 2016 and 2017 : INSA Rennes

Outils mathématiques pour l'ingénieur

Tutorials, undergraduate level.

Sept. 2015–June 2017 : Khôlles at Lycée Chateaubriand, Rennes

Weakly oral examinations, undergraduate level.

August 2015 : Institute of Applied Physics and Computational Mathematics, Beijing

Mathematical analysis of models for the propagation of surface and internal waves.

Minicourse aimed at PhD students and young researchers.

April 2014 : IRMAR, Université de Rennes

On the Cauchy problem for semilinear dispersive equations.

Minicourse aimed at PhD students.

March 2013 : EDST, Université Libanaise, Beirut

Analyse mathématique et modèles asymptotiques en océanographie côtière.

Graduate level.

2011 – 2012 : Chu Assistant Professor at Columbia University, New York

Fall 2011&2012: APMAE3101, *Linear Algebra*.

Spring 2012: APMAE4001, *Principles of Applied Mathematics*.

2008 – 2011 : Monitorat (64h per year) at Université Paris 6

Tutorials, 1st and 2nd years of Sciences and Technology course.