Ariane TRESCASES
14 rue de Madagascar
13006 Marseille, France

+33 6 87 69 65 87
trescase@cmla.ens-cachan.fr
http ://atrescases.perso.math.cnrs.fr

Born on 23/04/1989
French citizen

Present position

since sept. 2012	**PhD at CMLA, ENS Cachan** supervised by Prof. Laurent DESVILLETTES *Qualitative analysis of some partial differential equations arising in Physics and in Biology* Key-words : kinetic theory, Boltzmann equation, nonlinear parabolic systems, cross-diffusion, population dynamics, singular & boundary phenomena. **PhD defense : expected sept. 2015**.
	Teaching Assistant at the Department of Mathematics of ENS Cachan.

Education

2008–2012	**Salaried student at one of the Great Schools ENS (*normalienne*)** Ecole Normale Supérieure de Cachan
2011	**French *Agrégation* of Mathematics** *rank : 85/289* Prepared at ENS Cachan
2010	**M.Sc. in Mathematics specializing in PDEs** *Summa cum laude* Université Pierre et Marie Curie, Paris
2009	**B.Sc. in Mathematics** *Magna cum laude* ENS Cachan and Université Paris Diderot
2006–2008	***Classes Préparatoires* MPSI – MP*** Lycée Thiers, Marseille

Research

since nov. 2014	**Six-months visit at Academia Sinica, Taipei** invited by Prof. Tai-Ping LIU *Boundary phenomena for the Boltzmann equation*
2011–2012	**One-year internship at DAM, Brown Univ., Providence** supervised by Prof. Yan GUO *Study of the regularity of the Boltzmann equation in bounded domains* Proof of a result of regularity for the Boltzmann equation in convex domains [5].
April–August 2010	**M. Sc. internship at CMLA, ENS Cachan** supervised by Prof. Laurent DESVILLETTES *Cross-diffusion models in Population Dynamics* Result of weak stability in a "triangular" case (exploited in [4]).
Summer 2009	**Introductory research internship at CRM, UAB, Barcelona** supervised by Doc. Vincent CALVEZ, Prof. Laurent DESVILLETTES and Prof. José CARRILLO *Study of kinetic and parabolic models for chemotaxis.*

Articles

[1] A. TRESCASES *On triangular reaction cross-diffusion systems with possible self-diffusion*, submitted (2015), arXiv :1503.07468

[2] L. DESVILLETTES, TH. LEPOUTRE, A. MOUSSA, A. TRESCASES *On the entropic structure of reaction-cross diffusion systems*, arXiv :1410.7377, Comm. Partial Differential Equations 40 (2015) no. 9 pp. 1705–1747

[3] Y. GUO, C. KIM, D. TONON, A. TRESCASES *BV-regularity of the Boltzmann equation in non-convex domains*, submitted (2014) arXiv :1409.0160

[4] L. DESVILLETTES, A. TRESCASES *New results for triangular reaction cross diffusion system*, arXiv :1408.5814, Journal of Math. Anal. Appl 430 (2015) pp. 32–59

[5] Y. GUO, C. KIM, D. TONON, A. TRESCASES *Regularity of the Boltzmann equation in convex domains* (116 pages), submitted (2013) arXiv :1212.1694v4

Posters

Poster *Regularity of the Boltzmann equation in bounded domains*
Presented at the international summer school "M& MKT" (Porto Ercole, Italy, June 2014)

Poster *From a microscopic to a macroscopic model with cross-diffusion in Population Dynamics*
Presented at the international conference "ABPDE" (Université de Lille 1, France, November 2013) and at the international summer school "MMLS" (ENS de Lyon, France, May 2013)

Oral communications

On the regularity of the Boltzmann equation in bounded domains [3], [5]

June 2015   **Geometric Analysis & PDE Seminar (1 hour)** Univ. of Cambridge, U.K.

June 2015   **Seminar (1 hour)** IMB, Bordeaux, France

June 2015   **Short talk (20 min)** at the Congrès SMAI 2015, Les Karellis, France

Apr. 2015   **Seminar (2 x 1 hour)** Tsinghua University, Beijing, China

Jan. 2015   **Talk (30 min), Annual Workshop on Diff. Eq.** NTTU, Taitung, Taiwan

Dec. 2014   **Talk (50 min) at the conference "Nonlinear Analysis : Boundary Phenomena for Evolutionary PDE"** Acad. Sinica, Taipei, Taiwan

Dec. 2014   **Informal seminar (2 x 3 hours)** Academia Sinica, Taipei, Taiwan

Nov. 2014   **Talk (35 min) at the international conference "Kinetic equations"** CIRM, Marseille, France

On cross-diffusion systems in population dynamics [1], [2], [4]

July 2015   **Talk (30min) at the MiniSymposium "Parabolic Equations in Life Sciences", EquaDiff Conference** Lyon, France

Mar. 2015   **Seminar (1 hour)** Hong-Kong Baptist University, Hong-Kong

Feb. 2015   **Informal seminar (1 hour)** KAIST, Daejeon, Korea

Feb. 2015   **Seminar (1 hour)** SNU, Seoul, Korea

Feb. 2015   **Informal seminar (2 hours)** Academia Sinica, Taipei, Taiwan

Sep. 2014   **Seminar (40min)** ASC, TU Wien, Austria

Sep. 2014   **Talk (40min) at the international school "Analysis and Applications of PDE"** Graz, Austria

May 2014   **Talk (40min) at the international workshop "Parabolic Equations"** ENS de Cachan, France

May 2014   **Student seminar (50 min)** Université Paul Sabatier, Toulouse, France

May 2014   **Talk (30 min) at the student colloquium "Inter'Actions en Mathématiques"** ENS de Lyon, France

Oct. 2013   **Student seminar (50 min)** LJLL, Université Pierre et Marie Curie, Paris

Schools and conferences attended

January 2015	23rd **Annual Workshop on Differential Equations** NTTU, Taitung, Taiwan Oral presentation
December 2014	**Conference "Nonlinear Analysis : Boundary Phenomena for Evolutionary PDE"** Academia Sinica, Taipei, Taiwan Oral presentation
December 2014	**Annual Meeting of the Taiwanese Mathematical Society** NCKU, Tainan, Taiwan
November 2014	**Conference "Kinetic Equations"** Cirm, Marseille, France Oral presentation
October 2014	**Workshop "Modèles cinétiques pour les gaz complexes"** IMB, Bordeaux, France
September 2014	**School "Analysis and Applications of PDE"** Graz, Austria, Oral presentation
June 2014	**School "Methods and Models of Kinetic Theory"** Porto Ercole, Italy Presentation of a poster
May 2014	**One-day workshop "Parabolic Equations"** Ens de Cachan, France Oral presentation
May 2014	**Student colloquium "Inter'Actions en Mathématiques"** Ens de Lyon, France Oral presentation
March 2014	**School "Mathématiques et Biologie, systèmes de particules et réaction-diffusion"** Cimi, Toulouse, France
December 2013	**Oberwolfach workshop "Classical and Quantum Mechanical Models of Many-Particle Systems"** Mfo, Oberwolfach, Germany
November 2013	**Colloquium "Asymptotic Behaviour of Systems of PDE Arising in Physics and Biology"** Université de Lille 1, France Presentation of a poster
May 2013	**School "Multiscale Modeling in the Life Sciences"** Ens de Lyon, France Presentation of a poster
March 2013	**Conference "Biological Invasions and Evolutionary Biology, Stochastic and Deterministic Models"** Université Claude Bernard Lyon 1, France
September 2012	**School "Modélisation en Dynamique des Populations et Evolution"** La Londe-les-Maures, France
January 2012	**Joint Mathematics Meeting Ams&Maa** Boston, USA

Schools and conferences attended

Autumn 2011	**Semester program "Kinetic Theory and Computations"** ICERM, Brown University, Providence, USA
January 2011	**Conference "Kinetic theory, optimal transport, probability, geometry : old and new" in the honor of Cédric Villani** ENS de Paris, France
May 2010	**School "Methods and Models of Kinetic Theory"** Porto Ercole, Italy
February 2010	**School "PDE and Mathematical Biology"** Universidad de La Habana, Cuba
September 2009	**School "Ecole de Biologie"** CIRM, Marseille, France

Teaching

since sept. 2012	**Teaching Assistant (128 hrs.)** Dept. of Mathematics, ENS Cachan
	Preparation to the *Agrégation* – Master of Education *The* Agrégation *is a French competitive examination to select highly qualified teachers to teach at any level from secondary school to university.* - Numerical analysis : courses and exercises - Probability : theoretical exercises and numerical simulations - Mathematical analysis : "Leçons" (*preparation to teach : plans of the courses to be taught by the future teachers and oral practice*) - Mathematical analysis : mock oral tests for the final *Agrégation* exam

Services and responsibilities

Elected member of the Graduate School Council ENS Cachan – 2013–2014

Representative of the Junior Researchers at CMLA
Committee in charge of the new logo of CMLA ENS Cachan – Spring 2014

Reviewing for the Journal *Acta Applicanda Mathematicae*

Relevant skills

Languages : English (fluent), French (native), Italian (basic).

Computation softwares : Caml, Maple, Matlab, Scilab.

Referees

Prof. Laurent DESVILLETTES (PhD advisor)
Professor at CMLA, ENS Cachan
+33 1 47 40 21 50
desville@cmla.ens-cachan.fr

Prof. Yan GUO
Professor at DAM, Brown University
(401) 863-2354
yan_guo@brown.edu

Prof. Chanwoo KIM
Assistant Professor at the Dept. of Mathematics, University of Wisconsin-Madison
(608) 265-2494
ckim@math.wisc.com