



HAL
open science

Special Issue of Chinese Annals of Mathematics Series B, 36 (5), (2015), dedicated to Professor Luc Tartar
Alexandre Radjesvarane, Alain Damlamian, Tatsien Li, François Murat

► **To cite this version:**

Alexandre Radjesvarane, Alain Damlamian, Tatsien Li, François Murat. Special Issue of Chinese Annals of Mathematics Series B, 36 (5), (2015), dedicated to Professor Luc Tartar. R. Alexandre, A. Damlamian, F. Murat & T. Li. Special Issue of Chinese Annals of Mathematics Series B, 36 (5), 2015. hal-01502677

HAL Id: hal-01502677

<https://hal.sorbonne-universite.fr/hal-01502677>

Submitted on 5 Apr 2017

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

ISSN 0252-9599
CN 31-1329/01

Volume 36 · Number 5 · September 2015

CHINESE ANNALS OF MATHEMATICS

SERIES B

数学年刊 B 辑

TA-TSIEN LI
Editor-in-Chief



Editorial Office
of CAM



Springer

CONTENTS

- Amit ACHARYA · Xiaohan ZHANG
From Dislocation Motion to an Additive Velocity Gradient
Decomposition, and Some Simple Models of
Dislocation Dynamics 645–658
- Alexandre CABOUSSAT · Roland GLOWINSKI
A Penalty-Regularization-Operator Splitting Method for the
Numerical Solution of a Scalar Eikonal Equation 659–688
- Alexandre CABOUSSAT · Roland GLOWINSKI · Tsorng-Whay PAN
On the Numerical Solution of Some Eikonal Equations:
An Elliptic Solver Approach 689–702
- Juan CASADO-DÍAZ
Some Smoothness Results for Classical Problems in
Optimal Design and Applications 703–714
- Gui-Qiang G. CHEN
Weak Continuity and Compactness for Nonlinear
Partial Differential Equations 715–736
- Carlos CONCA · Rodrigo LECAROS · Jaime H. ORTEGA · Lionel ROSIER
Identifiability and Stability of an Inverse Problem
Involving a Fredholm Equation 737–762
- Jean Michel CORON · Simona Oana TAMASOIU
Feedback Stabilization for a Scalar Conservation Law
with PID Boundary Control 763–776
- Jean DOLBEAULT · Maria J. ESTEBAN · Gaspard JANKOWIAK
The Moser-Trudinger-Onofri Inequality 777–802
- Rui DU · Lei ZHANG
Two-Level Additive Schwarz Methods Using Rough
Polyharmonic Splines-Based Coarse Spaces 803–812
- Gilles A. FRANCFORT · Alessandro GIACOMINI
The Role of a Vanishing Interfacial Layer in Perfect Elasto-Plasticity 813–828
- Kirill P. GOSTAF · Olivier PIRONNEAU
Pressure Boundary Conditions for Blood Flows 829–842
- Sergio GUTIÉRREZ
An Optimal Design Method Based on Small Amplitude Homogenization 843–854
- Feimin HUANG
Thermal Creep Flow for the Boltzmann Equation 855–870
- Michał KOWALCZYK · Benoît PERTHAME · Nicolas VAUCHELET
Transversal Instability for the Thermodiffusive Reaction-Diffusion System 871–882
- Roger LEWANDOWSKI
Long-Time Turbulence Model Deduced from the Navier-Stokes Equations 883–894

Available
online
springerlink.com

Comprehensively covered by
Science Citation Index Expanded
Zentralblatt MATH Mathematical
Reviews and Current Contents

Chin. Ann. Math.
36 B (5) 645–894 (2015)
Printed on acid-free paper

ISSN 0252-9599



邮发代号: 4-851

ISSN 0252-9599

CN 31-1329/O1

Volume 36 · Number 5 · September 2015

CHINESE ANNALS OF MATHEMATICS

SERIES B

TA-TSIEN LI

Editor-in-Chief



Editorial Office
of CAM



Springer

Indexed in
Science Citation Index Expanded®
CompuMath Citation Index®

Sponsored by Fudan University
appointed by the Ministry
of Education of China
(with the help of SSTLP).
Supported by the National Natural
Science Foundation of China.

The Special Issue of Chinese Annals of Mathematics Series B
Dedicated to Professor Luc Tartar

The Guest Editors

Radjesvarane ALEXANDRE Alain DAMLAMIAN François MURAT



Professor Luc Tartar

Preface

Radjesvarane ALEXANDRE Alain DAMLAMIAN

Tatsien LI François MURAT

The *International Conference on Nonlinear and Multiscale Partial Differential Equations: Theory, Numerics and Applications* was held on September 16–20, 2013 at Fudan University, Shanghai. It was organized in honor of Luc Tartar by the *Institut Sino-Français de Mathématiques Appliquées* (ISFMA, the Sino-French Institute of Applied Mathematics). Its aim was to present recent achievements in the theory and the numerics of the nonlinear partial differential equations, and especially of their multiscale aspects, topics to which Luc Tartar made outstanding contributions.

The conference gathered 19 plenary speakers from Chile, China, France, Spain, Switzerland, the United Kingdom and the United States of America, 14 of whom have accepted to give a written version of their contribution to constitute the present *Special Issue of Chinese Annals of Mathematics dedicated to Luc Tartar*. We are very grateful to them for their participation and contributions.

The conference was sponsored by the Ambassade de France in Beijing, the Chinese Mathematical Society, the Consulat Général de France in Shanghai, Fudan University, the Institut National des Sciences Mathématiques et de leurs Interactions (INSMI-CNRS), the Mathematical Center of the Ministry of Education of China, the Shanghai Center for Mathematical Sciences (SCMS), Shanghai Jiaotong University and the Shanghai Key Laboratory for Contemporary Applied Mathematics. We wish to express to all of them, as well as to the organizing institution, the *Institut Sino-Français de Mathématiques Appliquées*, our sincere thanks for their strong support. Our thanks also go to Ms. Wei Wu and Ms. Chunlian Zhou for their patient and efficient work in editing this special issue.

Let us conclude this Preface by a few words about the life and work of Luc Tartar.

Luc Tartar was born in 1946. He studied at the Ecole Polytechnique in Paris, one of the most famous schools of higher education in France. After the Ecole Polytechnique, he decided to dedicate himself to research in applied mathematics, and more especially in partial differential equations.

He prepared his thesis under the supervision of Jacques-Louis Lions. In France, at that time, the thesis was not a PhD thesis like it is now, but a much more advanced thesis which usually required five to six years of work. Luc Tartar completed his thesis in two and a half years. His thesis committee was composed of Jacques-Louis Lions, Laurent Schwartz and Jean-Pierre Serre (both Laurent Schwartz and Jean-Pierre Serre are Fields medalists).

Luc Tartar was immediately appointed as Full Professor at the University of Paris-Dauphine

at the age of 25. He then moved to the University of Paris-Sud Orsay, and later worked for five years at the Commissariat à l'Énergie Atomique (CEA, the French Atomic Energy Organization). In 1987, he accepted a Full Professorship at Carnegie Mellon University in Pittsburgh, USA, where he was later awarded the special title of University Professor. He retired in 2012.

In 1987 he was elected a corresponding member of the Académie des Sciences de Paris, and in 2006 a foreign member of the Istituto Lombardo Accademia di Scienze e Lettere di Milano. He has written important articles and a series of books about Navier-Stokes equations, kinetic theory, Sobolev spaces and homogenization theory.

From the beginning of his career, Luc Tartar has had a strong interest for mechanics and physics, and has studied them with the goal of developing mathematical objects adapted to their needs. He is one of the world leading experts in partial differential equations and in the calculus of variations. He made outstanding contributions in these fields, especially in nonlinear elliptic and hyperbolic partial differential equations. Among other tools, he introduced and developed the compensated compactness theory and the notion of H -measures as well as the method of oscillating test-functions which is of worldwide use in homogenization theory. These notions and some others he introduced and developed are nowadays used as very natural objects and considered as classics. Without exaggeration, it can be said that the work of Luc Tartar has changed the mathematics of nonlinear partial differential equations.