Ilias Chenn

CONTACT
INFORMATION

Department of Mathematics
University of Toronto
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PERSONAL
INFORMATION

Legal Name: Li Chen
Born: November 27, 1990 in Kunming, China
Citizenship: Canadian

RESEARCH
INTERESTS

- Mathematical physics: existence of solutions of functional equations and PDEs of quantum physics and derivation of effective equations in suitable physical regimes.
- Numerical analysis: I am interested in the application of numerical methods and machine learning to mathematical physics.

EDUCATION

University of Toronto, Toronto, Canada

Ph.D. candidate, mathematics,   August 2019
- Thesis topic: Effective Equations of Quantum Physics
- Advisor: Prof. Israel Michael Sigal

M.Sc., mathematics,   August 2014
- Thesis Topic: On Existence of Solutions to the Ginzburg-Landau Equations
- Advisor: Prof. Israel Michael Sigal

University of Waterloo, Waterloo, Canada

B.Math., pure mathematics,   June 2013
- CGPA 4.0/4.0
- Dean's Honor List

Western Canada High School, Calgary, Canada

Diploma   June 2009
- International Baccalaureate Certificate
- Honor Society Lifetime Member

ACADEMIC VISIT

ETH Zürich, Zürich, Switzerland

Academic Guest   September 2015 – May 2016
- Host: Professor Gian Michele Graf at the Institute of Theoretical Physics,

PUBLICATIONS &
PREPRINTS

[1] I. Chenn, R. L, Frank, C. Hainzl, I. M. Sigal, (2018) Microscopic Derivation of the Ginzburg-Landau equations. In preparation.

[2] I. Chenn, I. M. Sigal, (2018) Macroscopic Electrostatics at Positive Temperature from the Density Functional Theory. To be submitted to arXiv. PDF: http://www.math.toronto.edu/lchen/data/dielectric.pdf

[3] I. Chenn, I. M. Sigal, (2017) On the Bogolubov-de Gennes Equations. In preparation. Previous draft: [arXiv:1701.06080]

[4] I. Chenn, I. M. Sigal, (2018) On Effective PDEs of Quantum Physics. To appear in the Proceedings of the 11th ISAAC 2017, BirkhÃd'user series "Trends in Mathematics, Research Perspectives".

[5] I. Chenn, G. Fournodavlos, I. M. Sigal, (2018) The Effective Dynamics of the Volume Preserving Mean Curvature Flow. Journal of Statistical Physics. July 2018, Volume 172, Issue 2, pp 458 - 476.

[6] I. Chenn, P. Smyrnelis, I. M. Sigal, (2018) On Abrikosov Lattice Solutions of the Ginzburg-Landau Equations. Mathematical Physics, Analysis and Geometry. March 2018, 21:7 [arXiv:1701.06076]

CONFERENCE
TALKS

[7] "On the Bogolubov-de Gennes Equations". Mathematical Challenges in Quantum Mechanics (MCQM) II, Rome, Italy, February 2018

[8] "On the Bogolubov-de Gennes Equations". Joint Mathematics Meeting, San Diego, January 2018

[9] "Linear Bogolubov-de Gennes Equation and Its Spectral Property". Zürich 2017 Summer School – Current Topics in Mathematical Physics, Zürich, Switzerland, July 2017

[10] "On the Derivation of the Ginzburg-Landau Equations". Quantum Many-body Problem and its Mean-field Approximations Conference, Zürich, Switzerland, April 2016

[11] "Multi-vortex Solutions of the Ginzburg-Landau Equations". MCQM I, Bressanone, Italy, February 2016

[12] "A Taste of Homotopy Group". Canadian Undergraduate Mathematics Conference, Okanagan, Canada, July 2012

[13] "Relations Between Minimal Surface and Special Lagrangian Manifold". Young Mathematicians' Conference, Columbus, USA, August 2011

SEMINAR TALKS

[14] Various. Professor Sigal's working seminar. Toronto, Canada. 2014 - 2019

[15] "Vortices and the Ginzburg-Landau Equation". Technion analysis Seminar, Haifa, Israel, June 2016

[16] Various. Mathematical physics working seminar, Zürich, Switzerland, 2015 - 2016

CONFERENCE &
SUMMER
SCHOOLS

[17] International Congress of Mathematical Physics, Montreal, Canada, July 2018

[18] Young Researchers' Symposium at the International Congress of Mathematical Physics, Montreal, Canada, July 2018

[19] Summer School on Current Topics in Mathematical Physics, Fields Institute, Toronto, Canada, July 2018

[20] Mathematical and Numerical Aspects of Quantum Dynamics, University of Maryland, Maryland, USA, June 2018

[21] Mathematical Challenges in Quantum Mechanics II, Rome, Italy, February 2018

[22] Joint Mathematical Meetings 2018, San Diego, USA, January 2018

[23] Zürich 2017 Summer School – Current Topics in Mathematical Physics, Universität Zürich, Switzerland July 2017

[24] Mathematical Challenges in Quantum Mechanics I, Bressanone, Italy, February 2016

[25] Quantum Mathematical Physics, Universität Regensburg, Regensburg, Germany, September 2014

[26] Connections in Geometry and Physics, Perimeter Institute for Theoretical Physics, Waterloo, Canada May 2012

[27] Canadian Undergraduate Mathematics Conference, University of British Columbia at Okanagan, Okanagan, Canada July 2012

[28] Young Mathematicians' Conference, Ohio State University, Columbus, USA, August 2011

TEACHING
EXPERIENCE

University of Toronto, Toronto, ON

Instructor   May 2017 – April 2019

- MAT 133 Calculus and Linear Algebra for Commerce
  - Summer 2018, Fall 2018, and Winter 2019
  - Responsible for 3-hour lectures and 1-hour office hour per week
  - Coordinated and organized the full 2018 summer course at: http://www.math.toronto.edu/lchen/mat133.html.

- MAT 135 Integration
  - Summer 2017
  - Responsible for 3-hour lectures and 1-hour office hour per week
  - Coordinated and organized the full 2017 summer course

Teaching Assistant   September 2013 – August 2019

- MAT 135 Calculus I
- MAT 235 Multivariable Calculus
- MAT 244 Ordinary Differential Equation
- APM 346 Partial Differential Equation
- APM 421/MAT 1723 Quantum Mechanics
- APM 446/MAT 1508 Applied Nonlinear Equations

University of Waterloo, Waterloo, ON

Teaching Assistant   September 2011 – December 2011
- MATH 239 Introduction to Combinatorics

AWARDS
Natural Science and Engineering Research Council of Canada
- Alexander Graham Bell Canada Graduate Scholarships ($100,000), 2015–2018
- Alexander Graham Bell Master's Canada Graduate Scholarship ($15,000), 2013
- Undergraduate Student Research Award, 2011 and 2012

Other Notable Awards
- Ontario Graduate Scholarship ($15,000), 2014
- Queen Elizabeth II Graduate Scholarship ($15,000), 2018
- William and Nona Heaslip Scholarship for 2nd to 4th year study at University of Waterloo, 2010
- Canadian Association of Physics Exam: 1st place in Alberta (18th in Canada), 2009

PROGRAMMING
- Proficient: LaTeX
- Experienced: Python
- Working: C/C++, Maple, Mathematica, Scheme
- Github: `https://github.com/nehcili/`

LANGUAGE
Proficient in English and conversational in Chinese