

# CURRICULUM VITAE

## Dr. Agissilaos (Agis) Athanassoulis

### CONTACT INFORMATION

Department of Mathematics  
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### PERSONAL INFORMATION

Name: Agissilaos (Agis) Athanassoulis

Languages: Greek, English, French

### RESEARCH INTERESTS

Quantum statistical models, Nonlinear waves, Scientific computing, Rigorous asymptotics

### EDUCATION

June 2007: PhD in Applied & Computational Mathematics, Princeton University  
Thesis Title: “Smoothed Wigner Transforms and Homogenization of Wave Propagation”  
Advisor: Prof. Ingrid Daubechies  
June 2005: Master in Applied and Computational Mathematics, Princeton University  
June 2003: Bachelor’s Degree in Mathematics, University of Athens

### EMPLOYMENT

September 2022 – present Senior Lecturer, Department of Mathematics, University of Dundee  
January 2017 – August 2022 Lecturer, Department of Mathematics, University of Dundee  
October 2013 – December 2016 Lecturer, Department of Mathematics, University of Leicester

### POSTDOCS

November 2012 – September 2013 ACMAC, University of Crete  
March 2011 – September 2011 DAMTP, University of Cambridge  
March 2010 – February 2011 CMLS, École polytechnique, Paris  
November 2008 – February 2010 DMA, École Normale Supérieure, Paris  
November 2007 – October 2008 ERCIM “Alain Bensoussan” fellow  
July 2007 – October 2007 Wolfgang Pauli Institute, Vienna

### PERSONAL GRANTS, AWARDS AND FELLOWSHIPS

November 2007 – October 2008 Fellow of the European Research Consortium for Informatics and Mathematics  
September 2003 – June 2007 Stanley J. Seeger Fellow  
October 2004 – September 2005 Alexander S. Onassis Foundation Fellow  
September 2000 – June 2002 Greek State Foundation for Scholarships Fellow

## PEER REVIEWED JOURNAL PUBLICATIONS

1. ‘Efficient numerical approximations for a nonconservative nonlinear Schrödinger equation appearing in wind-forced ocean waves’, with I. Kyza & T. Katsaounis **Studies in Applied Mathematics** 153-4 (2024) e12774
2. ‘Modulation Instability and Convergence of the Random-Phase Approximation for Stochastic Sea States’, with I. Kyza, **Water Waves** 6-1 (2024) pp. 145-167
3. ‘A novel, structure-preserving, second-order-in-time relaxation scheme for Schrödinger-Poisson systems’, with T. Katsaounis, I. Kyza, & S. Metcalfe **Journal of Computational Physics** 112307 (2023)
4. ‘Phase Resolved Simulation of the Landau–Alber Stability Bifurcation’, **Fluids** 8-1 (2023) 13
5. ‘Modelling of Ocean Waves with the Alber Equation: Application to Non-Parametric Spectra and Generalisation to Crossing Seas’, with O. Gramstad, **Fluids** 6-8 (2021) 291
6. ‘Strong solutions for the Alber equation and stability of unidirectional wave spectra’, with G. Athanassoulis, M. Ptashnyk & T. Sapsis, **Kinetic & Related Models** 13-4 (2020) pp. 703-737
7. ‘Semiclassical regularization of Vlasov equations and wavepackets for nonlinear Schrödinger equations’, **Nonlinearity** 31-3 (2018) pp. 1045-1072
8. ‘Localized instabilities of the Wigner equation as a model for the emergence of Rogue Waves’, with G. Athanassoulis & T. Sapsis, **Journal of Ocean Engineering and Marine Energy** 3-4 (2017) pp. 353-372
9. ‘Regularized semiclassical limits: linear flows with infinite Lyapunov exponents’, with Th. Katsaounis & I. Kyza, **Communications in Mathematical Sciences** 14-7 (2016) pp. 1821-1858
10. ‘Numerical simulations of X-rays Free Electron Lasers (XFEL)’, with P. Antonelli, Z. Huang & P. Markowich, **Multiscale Modeling and Simulation (SIAM)**, 12-4 (2014) pp. 1607-1621
11. ‘On the XFEL Schrödinger equation: highly oscillatory magnetic potentials and time averaging’, with P. Antonelli, H. Hajaiej & P. Markowich, **Archive for Rational Mechanics and Analysis**, 211-3 (2014) pp. 711-732
12. ‘On the selection of the classical limit for potentials with BV derivatives’, with T. Paul, **Journal of Dynamics and Differential Equations**, 25-1 (2013) pp. 33-47
13. ‘Strong and weak semiclassical limits for some rough Hamiltonians’, with T. Paul, **Mathematical Models & Methods In Applied Sciences**, 22-12 (2012) 1250038
14. ‘Semiclassical Propagation of Coherent States for the Hartree Equation’, with T. Paul, F. Pezzotti & M. Pulvirenti, **Annales Henri Poincaré**, 12-8 (2011) pp. 1613-1634
15. ‘Strong phase-space semiclassical asymptotics’, with T. Paul, **SIAM Journal on Mathematical Analysis**, 43-5 (2011) pp. 2116-2149
16. ‘Strong Semiclassical Approximation of Wigner Functions for the Hartree Dynamics’, with T. Paul, F. Pezzotti & M. Pulvirenti, **Rendiconti Lincei - Matematica e Applicazioni**, 22-4 (2011) pp. 525-552

17. ‘*Smoothed affine Wigner transform*’, with T. Paul, **Applied and Computational Harmonic Analysis**, 28-3 (2010) pp. 313-319
18. ‘*Coarse-scale representations and smoothed Wigner transforms*’, with N. J. Mauser & T. Paul, **Journal de Mathématiques Pures et Appliquées**, 91-3 (2009) pp. 296-338
19. ‘*Exact equations for smoothed Wigner transforms and homogenization of wave propagation*’, **Applied and Computational Harmonic Analysis**, 24 (2008) pp. 378 - 392
20. ‘*Smoothed Wigner transforms in the numerical simulation of semiclassical (high-frequency) wave propagation*’, **Dynamics of Continuous, Discrete and Impulsive Systems - Series A** 14-S2 (2007) pp. 247 - 252

#### PEER REVIEWED PROCEEDINGS PUBLICATIONS

1. ‘*Characterization of the emergence of rogue waves from given spectra through a Wigner equation approach*’, ASME 2018 37th International Conference on Ocean, Offshore and Arctic Engineering (2018)
2. ‘*Smoothed Wigner transforms and homogenization of wave propagation*’, Days on Diffraction International Conference (2007)
3. ‘*Exact equations for smoothed Wigner transforms and homogenization of wave propagation*’, with K.S. Politis, Proceedings in Applied Mathematics and Mechanics, 7-1, pp. 2040019-2040020 (2007)
4. ‘*The Smoothed Wigner Transform Method: Precise Coarse-Scale Simulation of Wave Propagation*’, International Conference of Numerical Analysis and Applied Mathematics, AIP Conference Proceedings 936, 58 (2007)

#### PREPRINTS

1. ‘*Global existence for the Alber equation with small data on the torus*’ (arXiv:2604.16998)
2. ‘*A structure-preserving, second-order-in-time scheme for the von Neumann equation with power non-linearity*’, with I. Kyza and F. Karakatsani (arXiv:2506.06879)

#### INVITED TALKS – CONFERENCES & WORKSHOPS

Hyperbolic Differential Equations, Calculus of Variations and Applications, FORTH, July 2024

Waves and Free Surface Flows: the Next Twenty Years, ICMS, May 2023

Waves, probabilities and memories, National Technical University of Athens, July 2022

[New horizons in dispersive hydrodynamics, Isaac Newton Institute, Cambridge, June 2021](#)

Nonlinear effects in PDEs and related problems, École polytechnique, Paris, May 2019

Integrable Systems in Newcastle, Northumbria University, Newcastle upon Tyne, April 2019

First Congress of Greek Mathematicians, “Numerical Analysis” Session, Athens, June 2018

First Congress of Greek Mathematicians, “Differential Equations & Dynamical Systems” Session, Athens, June 2018

International Conference on Ocean, Offshore & Arctic Engineering, “Abnormal or Rogue Waves” Special Session, Madrid, June 2018

Numerics for Cosmology – The Schrödinger method, Wolfgang Pauli Institute, Vienna, May 2018

Waves in Fluids, University of Dundee, September 2017

The Fifth Scottish PDE Colloquium, University of St Andrews, June 2017

11<sup>th</sup> AIMS Conference on Dynamical Systems, Differential Equations and Applications, “Dispersive Effects in Nonlinear PDEs” Special Session, Orlando FL, July 2016

The Fourth Scottish PDE Colloquium, University of Dundee, June 2016

SIAM Conference on Nonlinear Waves and Coherent Structures, “Large Time Behavior in Schrödinger Equations from Different Perspectives” Minisymposium, Cambridge, August 2014

The Second Scottish PDE Colloquium, ICMS, Edinburgh, May 2014

British Computational PDEs Colloquium: New Trends, ICMS, Edinburgh, January 2014

SMAW2012, ACMAC, Heraklion, Greece, June 2012

FACM 2011, New Jersey Institute of Technology, NJ, June 2011

Kinetic Description of Multiscale Phenomena, University of Wisconsin-Madison, WI, May 2011

DEASE meeting, Heraklion, Greece, May 2009

Applied Analysis and Fast Computation in Phase-Space II, WPI, Vienna, Austria, November 2008

Transformée en ondelettes continues et ondelette de Morlet, 1978-2008 : Colloque international en l’honneur de Jean Morlet, CIRM, Marseille, France, October 2008

Applied Analysis and Fast Computation in Phase-Space I, WPI, Vienna, Austria, September 2008

#### **INVITED TALKS – SEMINARS**

Waves and Flows Seminar, Department of Engineering Science, University of Oxford, March 2023

Analysis Seminar, School of Mathematics, University of Edinburgh, September 2018

Marine and Ocean Hydrodynamics Seminar, School of Naval Architecture and Marine Engineering, NTUA, Athens, June 2018

Applied and Computational Mathematics Seminar, School of Mathematics, University of Edinburgh, February 2018

PDE Seminar, Department of Mathematics and Statistics, Reading, October 2017

Mathematics Seminar, School of Applied Mathematical and Physical Sciences, NTUA, Athens, June 2017

Mathematics Seminar, University of St Andrews, January 2017

Mathematics Seminar, University of Dundee, September 2016

Applied Mathematics & Mathematical Physics Seminar, Department of Mathematics, Imperial College London, February 2015

Scientific Computing Seminar, Department of Applied Mathematics, Brown University, September 2014

Sand Lab Seminar, Department of Mechanical Engineering, MIT, September 2014

Applied and Computational Mathematics Seminar, Department of Mathematics, University of Wisconsin – Madison, September 2014

PDE Seminar, Department of Mathematics, University of Athens, May 2014

Mathematical Physics Seminar, Dipartimento di Matematica “G. Castelnuovo”, Università di Roma “La Sapienza”, December 2013

Mathematics Seminar, University of Dundee, July 2013

Applied and Numerical Analysis Seminar, DAM, University of Crete, Greece, December 2012

Séminaire Problèmes Spectraux en Physique Mathématique, IHP, Paris, April 2011

Séminaire X-EDP, CMLS, École polytechnique, Palaiseau, France, February 2010

Séminaire Laboratoire Jacques-Louis Lions, Université Pierre et Marie Curie, Paris, France, June 2008

Groupe de Travail “Analyse Non Linéaire”, Université Pierre et Marie Curie - École Normale Supérieure, Paris, France, April 2008

#### **CONTRIBUTED PRESENTATIONS**

The 30th Biennial Numerical Analysis Conference, Strathclyde, UK, July 2025

5th workshop on waves and wave-coupled processes, European Centre for Medium-Range Weather Forecasts, Reading, UK, April 2024

[Dispersive hydrodynamics: Physical applications, Isaac Newton Institute, December 2022](#)

[Analysis of dispersive systems, Isaac Newton Institute, September 2022](#)

Frontiers in analysis of kinetic equations, Isaac Newton Institute, January 2022

3rd IMA Conference on Nonlinearity and Coherent Structures, Newcastle, July 2019

2nd IMA Conference on Nonlinearity and Coherent Structures, Norwich, June 2017

Quantum Structures 2016, Leicester, July 2016

Days on Diffraction, St. Petersburg, Russia, May 2015

SET for Britain final, Westminster, March 2015

NLS: Theory and Applications, ACMAC, Heraklion, Greece, May 2013

HYP 2010, Beijing, China, June 2010

DSPDEs’10, Barcelona, Spain, May 2010

HYP 2008, University of Maryland, College Park, MD, June 2008

Days on Diffraction, St. Petersburg, Russia, May 2008

12th Panhellenic Analysis Conference, Athens, Greece, May 2008

Classical and Modern Harmonic Analysis, Edinburgh, UK, April 2008

Trends in Harmonic Analysis, Strobl, Austria, June 2007

Frontiers in Applied and Computational Mathematics, NJIT, NJ, May 2007

5th International Conference on Differential Equations and Dynamical Systems, Edinburg, TX, December 2006

#### PHD STUDENTS

- Andrew Fraser  
Thesis title: “Computational Analysis of Continuous Glucose Monitoring Data”  
Passed his viva in October 2023, co-advisors P. Murray, R. McCrimmon.
- Naher Alsafri  
Thesis title: “Numerical methods for a model of two-phase flows.”  
Passed his viva in June 2023, co-advisor P. Lin.

#### ORGANISATION OF LMS NETWORKS

“Scottish Numerical Methods Network”, [2017-18](#), [2018-19](#), [2019-20](#),  
jointly with [B. Goddard](#), [M. Ptashnyk](#) and [G. Barrenechea](#)

“Schrödinger Equations: Asymptotics, Integrability and Beyond”, [2016-17](#)  
jointly with [R. Schubert](#) and [G. El](#).

#### ORGANISATION OF SEMINARS AND WORKSHOPS

Mathematics Seminar at the University of Dundee, 2017-2022

Minisymposium “Waves in Fluids” at the [British Applied Mathematics Colloquium 2018](#) with [M. Carr](#), March 2018

Applied Mathematics Seminar at the University of Leicester, 2015-2016.

“Applied Analysis and Fast Computation in Phase-Space” [Session I](#) and [Session II](#), Wolfgang Pauli Institute, Vienna, Fall 2008.

#### SERVICE

I have been a referee for several journals, including: SIAM Journal on Mathematical Analysis, SIAM Journal on Applied Mathematics, Multiscale Modeling and Simulation, Applied and Computational Harmonic Analysis, Analysis & PDE, Nonlinearity, Communications in Mathematical Sciences, Journal of Scientific Computing, Physica D, Communications in Computational Physics, Journal of Fluid Mechanics and Journal

of Mathematical Physics. Data on some of my verified reviews can be found at my [ORCID profile](#) (scroll all the way down).

Department representative for AI in teaching research to the [Academy for the Mathematical Sciences](#).

In August 2023 I published an opinion piece on the likely impacts of LLMs in teaching University Mathematics in [Mathematics Today](#).

## **TEACHING**

I am an Associate Fellow of the [Higher Education Academy](#).

I was programme leader for the MSc Applied Mathematics at the University of Dundee 2020-24.

I was External Examiner for taught postgraduate programmes at the School of Mathematical and Computer Sciences at Heriot-Watt University 2020-24.

I am an External Examiner for the MSc in Mathematics and Data Science at the University of Stirling.

### **In the University of Dundee (UK):**

2nd year Calculus (MA22001); 3rd year Ordinary Differential Equations (MA31002); 3rd year Scientific Computing (MA32005); graduate Stochastic Processes (MA51005); graduate Dynamical Systems (MA51003).

### **In the University of Leicester (UK):**

1st year Linear Algebra; graduate Numerical Analysis ([MAGIC066](#)).

### **In the University of Crete (Greece):**

3rd year Numerical Methods for Ordinary Differential Equations.

### **In Princeton University (USA):**

During my graduate studies in Princeton I was a Teaching Assistant in several courses (Calculus for engineering students, for Prof. Ingrid Daubechies; Game Theory, for Prof. Hale Trotter; Introduction to Applied Mathematics, for Prof. Ingrid Daubechies).

## **PROFESSIONAL SOCIETIES MEMBERSHIP**

I am a member of the Edinburgh Mathematical Society and of the London Mathematical Society.

## **OUTREACH**

In March 2015 I was selected to present my work at the SET for Britain Final, in the House of Commons.

In September 2017 I presented the mathematics behind PageRank to high-school students in Dundee, in the context of Maths Week Scotland.