

# Dr VASILEIOS SYMEONIDIS

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## EDUCATION & POST-DOCTORAL POSITION

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**Massachusetts Institute of Technology** *Sea Grant College Program*

**2005-2006**

**Brown University** *Division of Applied Mathematics*

*Cambridge, MA, U.S.A.*

Post-doctoral associate

*Providence, RI, U.S.A.*

- Scientific computing for oceanographic simulations (at M.I.T.)
- Computational fluid dynamics, mesoscopic simulations (at Brown)

**Brown University** *Division of Applied Mathematics*

**2001-2005**

Ph.D. awarded October 2005

*Providence, RI, U.S.A.*

- Thesis title: *Numerical Methods for Multi-scale Modeling of Non-Newtonian Flows*
- Supervisors: George Em Karniadakis, Bruce Caswell

Fundamental research in numerical methods for fluid flow computer simulations in the continuum and atomistic scales. Expertise in physical and biological mathematical modeling of various systems, including dissipative particle dynamics (DPD), direct numerical simulation & applications to turbulence for drag reduction via active control

**Brown University** *Division of Applied Mathematics*

**1999-2001**

Master's in Applied Mathematics (Sc.M.). GPA 4.0 / 4.0

*Providence, RI, U.S.A.*

- Concentration: Numerical solution of partial differential equations; fluid mechanics

**University of Oxford** *St. John's College*

**1995-1999**

Master of Mathematics (M. Math, Honors, class 2:1). Parts I (1998) and II (1999)

*Oxford, England, U.K.*

Bachelor's and Master's equivalent

**Athens College** *Hellenic-American Educational Foundation, Psychicon*

**1982-1995**

High-school diploma, 4-year Lyceum

*Athens, Greece*

## HONORS & AWARDS

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- Keen Fellowship, Brown University (2005)
- Dissertation Fellowship, Brown University (2004)
- The Stella Dafermos Award, Brown University (2005)
- Nomination for teaching award, Brown University (2005)
- Member of the Greek team in pan-European ECIS mathematics contest (1995)
- Distinction in British A-level GCE examinations in two special papers: Physics & Further Mathematics (1994)

## WORK & RESEARCH EXPERIENCE / SERVICE

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**Hellenic-American Educational Foundation – Athens College** *Instructor*

**2016-present**

Instructor for all levels and all areas of high-school mathematics courses

*Athens, Greece*

**The American College of Greece, Deree College** *Professor*

**2010-present**

Currently part-time (past: full-time) professor

*Athens, Greece*

Instructor for mathematics and quantitative courses at various levels including:

Mathematics of Financial Derivatives / Mathematics of Finance / Mathematical Economics  
Finite mathematics / Applied Calculus / Mathematics for Computing / Mathematics for the Liberal Arts / College Algebra / Mathematics for Business, Economics and the Sciences / Mathematics and the Human Experience

<b>AutoMetis LTD</b> <i>Co-founder and Director</i>	<b>2013-present</b>
Company that deals with fully-automated strategies in the Foreign Exchange (FX) market, based on quantitative financial models. Development and maintenance of software as well as key strategies and modeling	
<b>Church of Greece, Holy Synod</b> <i>Head of Property Development Division</i>	<b>2010-2011</b>
Development and investment of the real estate Ecclesiastical property throughout Greece. Portfolio includes the real estate assets of the Church of Greece and all metropolitan/monastery assets under potential liquidation	
<b>Technical Chamber of Greece</b> <i>Advisory Team to the President</i>	<b>2009</b>
Project management of the development and implementation of a wide-scope educational program offering specialized technical training courses to engineers throughout Greece	
<b>Dolphin Capital Partners</b> <i>Investment Analyst, Acquisitions</i>	<b>2007 – 2009</b>
€860-million real estate investment fund, FTSE AIM-listed. Responsibilities: modeling for viability of new acquisitions and investment proposals, financial analysis and rates-of-return of luxury ongoing tourist developments in South-East Europe & the Americas. Extensive exposure to all stages of new projects, including shareholders' agreements, quarterly projections & valuation	
<b>Mandatory Military Service</b> <i>Greek Armed Forces</i>	<b>2007</b>
Armored Vehicles Corps (Avlonas Center & 80 <sup>th</sup> National Guard Armored Battalion, Kos)	
<b>Research Assistant</b> <i>Division of Applied Mathematics, Brown University</i>	<b>1999-2006</b>
Constant inter-disciplinary collaboration with physicists, mechanical and ocean engineers, computer scientists and mathematicians. Emphasis on scientific computing through the development of numerical methods for simulations in fluid mechanics and related physical applications	
<b>Teaching Assistant</b> <i>Division of Applied Mathematics, Brown University</i>	<b>2000-2002, 2005</b>
Co-instructor for courses in: Introduction to Computing Sciences (semester II, 2005), Introduction to Numerical Analysis (semester I, 2002). Instructor of review sessions for undergraduate mathematics courses (Mathematics Resource Center, 2000-2002)	
<b>Web Administrator</b> <i>Division of Applied Mathematics, Brown University</i>	<b>2000-2004</b>
Responsibilities: Construction and maintenance of web pages (HTML and CGI) for: various research groups, centers, professors, specialist conferences and online research-oriented tutorials	
<b>Collaborator</b> <i>Department of Comparative Literature, Brown University's John Hay Library</i>	<b>2001</b>
Compiled, documented and categorized a large collection of rare books on ancient Greek literature	

## PUBLICATIONS

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- **V.Symeonidis, G.A.Zombanakis** *A Note on the Hellenic Territorial Waters Violations by Turkey: Assessment and Forecast*  
Nausivios Chora, Hellenic Naval Academy, v.8 Part D (2022) pp73-83

- **V.Symeonidis**, G.A.Zombanakis *Hellenic air-space violations by Turkish aircraft: A statistical assessment and a forecast*  
Security and Defence Quarterly, v.32, issue 5 (2020), pp7-18 (doi:10.35467/sdq/128224)
- **V. Symeonidis**, B. Caswell *The laminar hole pressure for Newtonian fluids*  
Experiments in Fluids, v.45, issue 1 (2008), pp123-129
- **V. Symeonidis**, B. Caswell *The limiting hole pressure in three dimensions*  
Journal of non-Newtonian Fluid Mechanics, v.145 (2007), pp57-68
- **V. Symeonidis**, G.E. Karniadakis, B. Caswell *Schmidt number effects in Dissipative Particle Dynamics simulation of polymers*  
Journal of Chemical Physics, v.125 (2006), pp184902-184914
- **V. Symeonidis**, G.E. Karniadakis *A family of time-staggered schemes for integrating hybrid DPD models for polymers: Algorithms and applications*  
Journal of Computational Physics, v.218, issue 1 (2006), pp82-101
- **V. Symeonidis**, G.E. Karniadakis, B. Caswell *Simulation of  $\lambda$ -phage DNA in microchannels using Dissipative Particle Dynamics*  
Bulletin of the Polish Academy of Sciences, v.53, issue 4 (2005), pp395-403
- **V. Symeonidis**, G.E. Karniadakis, B. Caswell *Dissipative Particle Dynamics Simulations of Polymer Chains: Scaling Laws and Shearing Response Compared to DNA Experiments*  
Physical Review Letters, v.95, issue 7 (12 August 2005), pp076001-(1-4) (also selected for publication in the Virtual Journal of Biological Physics Research, v.10, issue 4)
- **V. Symeonidis**, G.E. Karniadakis, B. Caswell *A seamless approach to multiscale simulation of complex fluids*  
IEEE Computing in Science and Engineering, v.7, issue 3 (May/June 2005), pp39-46
- S. Dong, D. Lucor, **V. Symeonidis**, J. Xu and G.E. Karniadakis *Multilevel Parallelization Models: Application to VIV*  
Proceedings of the Department of Defense High Performance Computing User Group Conference 2003 (IEEE, Seattle WA, May/June 2003), pp149-159
- X. Ma, **V. Symeonidis** and G.E. Karniadakis *A spectral vanishing viscosity method for stabilizing viscoelastic flows*  
Journal of non-Newtonian Fluid Mechanics, v.115 (2003), pp125-155
- Y. Du, **V. Symeonidis**, G.E. Karniadakis *Drag reduction in wall-bounded turbulence via a transverse traveling wave*  
Journal of Fluid Mechanics, v.457 (2002), pp1-34

## P A T E N T

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**U.S. Patent 6520455** *Method and apparatus for reducing turbulent drag*  
INVENTORS: George Em Karniadakis, Kenneth Breuer, **Vasileios Symeonidis**  
Date: 18-Feb-2003

## C O N F E R E N C E P R E S E N T A T I O N S

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- **Society of Rheology** (78<sup>th</sup> Annual Meeting, October 8-12, Portland, ME, 2006)  
- Title: Schmidt number effects in DPD simulation of polymer solutions
- **European Society of Rheology** (3<sup>rd</sup> Annual Meeting, April 27-29, Crete, Greece, 2006)  
- Title: Limiting hole pressure in three dimensions  
- Title: DPD simulations of dilute polymer solutions in microchannels

- **American Physical Society** (*Annual Meeting, March 13-17, Baltimore, MD, 2006*)  
- Title: Polymer chain simulations in microchannels with Dissipative Particle Dynamics
- **American Physical Society** (*58<sup>th</sup> Annual Meeting, Division of Fluid Dynamics, November 20-22, Chicago, IL, 2005*)  
- Title: Simulation of  $\lambda$ -phage DNA in microchannels using a coarse-grained MD method
- **Society of Rheology** (*77<sup>th</sup> Annual Meeting, October 16-20, Vancouver, Canada, 2005*)  
- Title: Mesoscopic simulation of polymer chains by DPD  
- Title: The circular-hole pressure for Non-Newtonian fluids
- **14th International Workshop on Numerical Methods for non-Newtonian Flows** (*June 12-15, Santa Fe, NM, 2005*)  
- Title: The hole pressure in three dimensions  
- Title: Scaling laws for polymers using mesoscopic simulations
- **Society of Rheology** (*76<sup>th</sup> Annual Meeting, February 13-17, 2005, Lubbock, TX, 2005*)  
- Title: Slow flow hole pressure for a tube on one wall of a plane channel  
- Title: Scaling laws for polymers using mesoscopic simulations
- **American Institute of Chemical Engineers** (*Annual Meeting, November 7-12, Austin, TX, 2004*)  
- Title: The hole pressure due to a tube on one wall of a plane channel
- **Transport Phenomena in Micro and Nano-devices** (*October 17-21, Kona Coast, Island of Hawaii, HI, 2004*)  
- Title: Stochastic MD simulations of complex fluids in microdomains
- **13<sup>th</sup> International Conference on the Discrete Simulation of Fluid Dynamics** (*August 16-20, Cambridge, MA, 2004*)  
- Title: Stochastic MD simulations of complex fluids in microdomains
- **6<sup>th</sup> International Conference On Spectral and High Order Methods (ICOSAHOM) 2004** (*June 21-25, Providence, RI, 2004*)  
- Title: Stabilization methods for Non-Newtonian models in complex geometries
- **7<sup>th</sup> U.S. National Congress on Computational Mechanics** (*July 28-30, Albuquerque, NM, 2003*)  
- Title: A spectral vanishing viscosity method for stabilizing viscoelastic flows
- **13<sup>th</sup> International Workshop on Numerical Methods for non-Newtonian Flows** (*June 4-7, EPFL Lausanne, Switzerland, 2003*)  
- Title: A spectral vanishing viscosity method for stabilizing viscoelastic flows
- **American Physical Society** (*55<sup>th</sup> Annual Meeting, Division of Fluid Dynamics, November 24-26, Dallas, TX, 2002*)  
- Title: A new method for stabilizing Non-Newtonian flows
- **American Physical Society** (*53<sup>rd</sup> Annual Meeting, Division of Fluid Dynamics, November 19-21, Washington, DC, 2000*)  
- Title: Turbulent drag reduction by traveling waves

## INVITED LECTURES / TALKS

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- **Bodossaki Lectures on Demand (Café Scientifique) Athens, Greece** (*November 18, 2014*)  
- Title: The Golden section and the Fibonacci numbers in everyday life
- **University of Rhode Island Department of Mechanical Engineering and Applied Mechanics** (*March 10, 2006*)  
- Title: DPD simulations of polymer solutions

- **Kent State University** *Department of Mathematical Sciences (March 1, 2006)*  
- Title: Numerical methods for multi-scale modeling of Non-Newtonian flows
- **Massachusetts Institute of Technology** *Department of Chemical Engineering (February 23, 2006)*  
- Title: DPD simulations of polymer solutions
- **Technische Universität Dresden** *Center for High Performance Computing / Institute of Aviation and Astronautics Technology (June 10, Germany, 2003)*  
- Title: Electromagnetic turbulence control using traveling waves and oscillations

## **SKILLS / LANGUAGES / AFFILIATIONS**

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- **SKILLS:** Numerical analysis, numerical algorithms, and mathematical modeling of various physical and other systems. Mathematical modeling and automated trading strategies using quantitative models & technical analysis. Very good command of programming languages (C/C++) & numerous software packages (e.g. MATLAB). Experienced user of UNIX, Linux & Windows environments
- **AFFILIATIONS:**
  - **President**, the Oxford University Alumni Society of Greece (2010-2014), Treasurer (2009-2010)
  - **Interviewer** for Brown University undergraduate applicants in Greece & Cyprus
  - Sigma Xi scientific research society (**full member**)
- Languages: Greek (native), English (fluent), French (intermediate)
- Sea-scout at leadership positions for nine consecutive years / Guitar / Various versions of billiards