

# Curriculum Vitae

## Vladimir Zubkov

School of Computing, Engineering and Mathematics,  
Brighton University  
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### WORK EXPERIENCE

- 2018-present:** Senior Lecturer (Assistant Professor)  
School of Computing, Engineering and Mathematics, University of Brighton
- 2012–present:** Associate Member, Wolfson College,  
Oxford University
- 2017-2018:** Lecturer  
School of Computing, Engineering and Mathematics, University of Brighton
- 2015-2017:** Research Fellow  
School of Computing, Engineering and Mathematics, University of Brighton
- 2010–2015:** Post-doctoral Researcher  
Mathematical Institute, Oxford University
- 2012, Feb.-May:** Visiting Fellowship (Research collaboration & Teaching)  
Mathematical & Physical Sciences and Engineering Divisions,  
King Abdullah University of Science and Technology, Saudi Arabia
- 2007–2010:** Consultant, part time  
Mathematics Learning Centre  
University of Limerick, Ireland
- 2006–2007:** Organization Development Manager  
Business World (Publishing House), Moscow

### EDUCATION

- 2007–2010:** PhD Graduate Programme  
Department of Mathematics and Statistics  
University of Limerick, Ireland
- 2005–2007:** MSc  
Faculty of Business Informatics, Department of Business Analysis  
National Research University - Higher School of Economics, Moscow
- 2000–2005:** BSc, MSc (**grade A+: the highest score for all subjects**)  
Department of Mathematics and Mechanics  
Moscow State University

## **PUBLICATIONS**

- V. Zubkov, G.E. Cossali, S. Tonini, O. Rybdylova, C. Crua, M. Heikal, S.S. Sazhin, 2017, Mathematical Modelling of Heating and Evaporation of a Spheroidal Droplet, *International Journal of Heat and Mass Transfer*, vol. 108, pp. 2181–2190.
- J. M. Oliver, J. P. Whiteley, M. A. Saxton, D. Vella, V. S. Zubkov and J. R. King, 2015, On contact-line dynamics with mass transfer, *Euro. Jnl of Applied Mathematics*, vol. 26, pp. 671-719.
- V. Zubkov, K. Short, A. Combes, J. Lefevre, Adler Ju, K. Georgas, B. Rumballe, L. O'Brien, N. Hamilton, A.P. McMahon, I. Smyth, M. Little, H. Byrne, 2015, A spatially-averaged mathematical model of kidney morphogenesis, *Journal of Theoretical Biology*, vol. 379, pp. 24-37.
- V.S. Zubkov, C.J.W. Breward, E.A. Gaffney, 2013, Meniscal tear film fluid dynamics near Marx's line, *Bulletin of Mathematical Biology*, vol. 75(9), pp. 1524-43.
- V.S. Zubkov, C.J.W. Breward, E.A. Gaffney, 2012, Coupling fluid and solute dynamics within the ocular surface tear film: A modelling study of black line osmolarity, *Bulletin of Mathematical Biology*, vol. 74(9), pp. 2062-93.
- E.S. Benilov, S.J. Chapman, J.B. McLeod, J.R. Ockendon and V.S. Zubkov, 2010, On liquid films on an inclined plate, *J. Fluid Mech.*, vol. 663, pp. 53-69
- E.S. Benilov and V.S. Zubkov, 2008, On the drag-out problem in liquid film theory, *J. Fluid Mech.* (2008), vol. 617, pp. 283-299
- V.S. Zubkov, 2005, The effects of the anomalous component of cosmic rays on excursion of the termination shock with the solar cycle. In: Proceedings of "Connecting Sun and Heliosphere", 12–17 June 2005, Whistler, Canada.

## **OTHER PUBLICATIONS**

- V. Zubkov, G.E. Cossali, S. Tonini, C. Crua, S.S. Sazhin, Modelling of Heating and Evaporation of Spheroidal Droplets", *Proceedings of the CHT-17 (Naples)*, 2017.
- V. Zubkov, G.E. Cossali, S. Tonini, C. Crua, S.S. Sazhin, Mathematical Modelling of Heating and Evaporation of a Spheroidal Droplet, *Proceedings of the ILASS (Brighton)*, 2016.
- C. Sean Bohun *at al.*, Modelling mass transfer in a rotating disk reaction vessel. *Proceedings of the 1st KAUST Study Group (Thuwal)*, 2011.
- T. Witelski *at al.*, Dynamic models of metastatic tumor growth, *Proceedings of the 27th Annual Workshop on Mathematical Problems in Industry (New Jersey)*, 2011.
- K. Bałdys *at al.* Comparable aggregated indicators of QoS in the telecoms market, *Proceedings of the 77th European Study Group with Industry (Warsaw)*. 2010.
- K. Borg, V. Cregan, A.C. Fowler, M. McGuinness, S.B.G. O'Brien, L.S. Schwartz and V. Zubkov. Partial wetting phenomenon in superhydrophobic microchannels, *Proceedings of the 70th Study Group Mathematics with Industry (Limerick)*. 2009.

## **PRESS (non-specialist articles about some of my research)**

- "Researchers recommend more crying from happiness", *METRO*, p.5, 24 Apr 2013
- "About the future of British science", *Anglia*, v.4, p.15, 2012

## **PUBLICATIONS (Theses)**

**Ph.D Thesis:** *On the drag-out problem in liquid film theory.* University of Limerick, Ireland, 2009.

**MSc Thesis:** *Development of key performance indicators for an enterprise using data mining and statistical methods of data analysis.* Higher School of Economics, Russia, 2007.

**MSc Thesis:** *The effects of the anomalous component of cosmic rays on excursion of the termination shock with the solar cycle.* Moscow State University, Russia, 2005.

## **PROFESSIONAL MEMBERSHIP**

**2014–present:** Scientific Advisory Board’s Researcher, Nanovision (ophthalmic company)

**2017–present:** UK Fluids Network, Special Interest Group: Fluid mechanics of the eye.

## **INVITED LECTURES AND CONFERENCE PRESENTATIONS**

“Mathematical modelling of heating and evaporation of spheroidal droplets in Diesel engine-like conditions”, Workshop “Scientific and technical grounds of future low-carbon propulsion”, Nov 2018, Newcastle, UK.

“Higher Education: the top universities”, invited lecture, Oct 2018, Marriott Hotel, Moscow, Russia.

“Mathematical modelling of problems in physics and biology. Kidney development”, lecture, Sep 2018, University of Limerick, Limerick, Ireland.

“How a university can become a successful startup incubator”, lecture, April 2018, New Economic School, Moscow, Russia.

“Mathematical Education”, lecture, Dec 2017, The Moscow State University, Moscow, Russia.

“On modern projects in applied mathematics and engineering”, course of lectures, Oct 2017, Student Innovation Platform, Tyumen Industrial University, Tyumen, Russia.

“What conditions a university could create for successful startups”, lecture, July 2017, National Research University Higher School of Economics, Moscow, Russia.

“Modelling of Heating and Evaporation of Spheroidal Droplets”, ICHMT International Symposium on Advances in Computational Heat Transfer “CHT-17”, May 2017, Naples, Italy.

“Mathematical Modelling of Heating and Evaporation of a Spheroidal Droplet”, Research Workshop “DIPSI 2017”, May 2017, Bergamo, Italy.

“Current problems in Applied Mathematics”, lecture, The Moscow State University, 2016, Dec 19, Moscow, Russia.

“Mathematical Modelling of Heating and Evaporation of a Spheroidal Droplet”, Research Workshop “MURPHYS 2016”, June 2016, Barcelona, Spain.

“Heating and evaporation of a non-spherical droplet”, Research Workshop “DIPSI 2016”, May 2016, Bergamo, Italy.

“Mathematical modelling of problems in biology”, lecture, May 2016, University of Bergamo, Italy.

“Mathematical modelling of heating and evaporation of a non-spherical droplet”, Conference “EMN Droplets Meeting 2016”, May 2016, San Sebastian, Spain.

“Fluid dynamics approach in mathematical modelling of kidney development”, Research Workshop “Heating and evaporation of droplets”, July 2015, Brighton, UK.

“Mathematical model of kidney branching morphogenesis”, British Applied Mathematics Colloquium 2014, April 2014, Cardiff, UK.

“Integration of universities and industry”, Workshop: "Youth, Science and Innovation", 2014, Apr 20-24, Kazan, Russia.

“A spatially-averaged model of branching morphogenesis”, lecture, Institute of Mechanics, The Moscow State University, 2013, Sep 10, Moscow, Russia.

“Mathematical model of kidney morphogenesis”, Oxford Conference on Challenges in Applied

- Mathematics, University of Oxford, 2013, Jul 1-5, Oxford, UK.
- “Mathematical Modelling: A New Tool for Studying Kidney Morphogenesis?”, International Workshop on Developmental Nephrology, University of Edinburgh, 2013, Jun 24-26, Edinburgh, UK.
- “Spatially-averaged mathematical model of kidney development”, The Society for Mathematical Biology Annual Meeting and Conference, 2013, Jun 10-13, Tempe, Arizona, USA.
- “Mathematical model of kidney morphogenesis”, lecture, Queensland University of Technology, 2013, Apr 26, Brisbane, Australia.
- “Spatially-averaged mathematical model of kidney morphogenesis”, lecture, University of Queensland, 2013, Apr 18, Brisbane, Australia.
- “Mathematical models of biological systems: the human tear film and kidney morphogenesis”, lecture, The Moscow State University, 2012, Dec 20, Moscow, Russia.
- “How to build a kidney: quantitative modelling of kidney morphogenesis across time and space”, HFSP meeting, 2012, Sep 19-20, Adelaide, Australia.
- “Hyperosmolarity of the tear film in dry eye syndrome”, 8th European Conference on Mathematical and Theoretical Biology, 2011, June 27-July 2, Krakow, Poland.
- “A model of tear film osmolarity”, lecture, University of Delaware, 2011, June 20, Newark, USA.
- “On the salts concentration dynamics in the tear film”, Center for Mathematical Biology, 2010, October 11, Oxford, UK.
- “A model of solute balance in the tear film. Positive effect of relative eyelid motion”, EUROMECH 518 Workshop: "Biomechanics of the Eye", 2010, July 26-28, London, UK
- “A model of solute balance in the tear film” (poster), Modelling at different scales in biology, 2010, June 21-23, Oxford, UK
- “On the drag-out problem with surface tension”, British Applied Mathematics Colloquium 2009, April 7-9, Nottingham, UK.
- “Solution of the drag-out problem in liquid film theory using numerical and asymptotical methods”, Analytical and Numerical Aspects of Evolution Equations 2009, March 30-April 3, Berlin, Germany.
- “The drag-out problem in liquid film theory. The case of non-negligible Capillary number”, MACSI Colloquium 2008, December 11, Dublin, Ireland.
- “The drag-out problem in liquid film theory”, The European Consortium For Mathematics In Industry 2008, June 30-July 4, London, UK.
- “The drag-out problem”, ISSEC – Irish Mechanics Society Joint Symposium 2008, May 15-16, Dublin, Ireland.
- “The drag-out problem in film coating theory”, MACSI Colloquium 2007, April 24, Limerick, Ireland.

## **RESEARCH WORKSHOPS AND COLLABORATION**

- Stochastic modelling of cancer evolution, Widely Applied Maths Seminar Series, Sep 2018, Harvard University, Cambridge, USA
- UKFN Special Interest Groups in Fluid Mechanics of the Eye, workshop, Sep 2017, Oxford, UK
- Collaboration with Prof. Melissa Little, Prof. Andy McMahon and Dr. Ian Smyth on the mathematical modelling of kidney development, Sep.-Oct, 2012; Apr.-May, 2013; Dec, 2013, The University of Queensland (Brisbane) and Monash University (Melbourne), Australia; University of South California, USA.
- “Networks in Biology” workshop, 2012, Dec 5, University of Oxford, UK
- Collaboration with Prof. Sigurdur Thoroddsen on the tear film experimental modelling, Feb.-May, 2012, Physical Sciences and Engineering, King Abdullah University of Science and Technology, Saudi Arabia

- 2<sup>nd</sup> Russian Interdisciplinary Study Group with Industry (co-organizer), 2011, September 19-23, Moscow, Russia
- Mathematics-in-Eyes Study Group, OCCAM, 2011, 11- 13 July, Oxford, UK
- Collaboration with Prof. Richard Braun on tear film modelling, June 20-25, Department of Mathematical Sciences, University of Delaware, USA
- The Twenty-Seventh Annual Workshop on Mathematical Problems in Industry, 2011, June 13 – 17, New Jersey Institute of Technology, USA
- 1<sup>st</sup> KAUST Study Group in Mathematics for Industry, 2011, January 23 – 26, Thuwal, Saudi Arabia
- 1<sup>st</sup> Russian Interdisciplinary Study Group with Industry, 2010, October 18-21, Moscow, Russia
- 77th European Study Group with Industry 2010, September 26- October 1, Institute of Mathematics of the Polish Academy of Sciences, Poland.
- British Applied Mathematics Colloquium 2010, April 6-9, Edinburgh, UK.
- 2<sup>nd</sup> Spring School - Analytical and Numerical Aspects of Evolution Equations 2010, March 28- April 1, Berlin, Germany.
- EUROMECH Colloquium 497 Recent developments and new directions in thin-film flow, 2009, July 6-9, Edinburgh, UK.
- 70th European Study Group with Industry 2009, June 28- July 3, University of Limerick, Ireland.
- Workshop, Nonlinear PDE and free boundary problems 2009, June 15-19, Warwick, UK.
- Academic visit, collaboration with Dr James Oliver on the problem “One drop measurement: surface wettability characterization using picolitre drops”, April 13 -May 2, Oxford Centre for Collaborative Applied Mathematics.
- Spring School - Analytical and Numerical Aspects of Evolution Equations 2009, March 30- April 3, Berlin, Germany.
- EMS-CIME course on Mathematical models in the manufacturing of glass, polymers and textiles 2008, September 8-19, Montecatini Terme, Italy.
- 62nd European Study Group with Industry 2008, January 21–25, University of Limerick, Ireland.

## **TEACHING EXPERIENCE**

- More than 12 years of teaching experience, including more than 10 years of teaching in English.
- Experience of teaching first, second and third year courses, postgraduate courses.
- I supervised graduate students (Brighton University) and co-supervised a master student from the Doctoral Training Centre (Oxford University).
- Experience of teaching students from non-English background, mature students and adult returners.
- Experience of working in four countries with very different cultural environments.
- 3 years of working experience as a consultant in Mathematics Learning Centre (University of Limerick) that supports students' mathematics learning across all university programmes.

## **Courses I have taught:**

- **Mathematics and Control**, University of Brighton, 2nd year course, class size: 180 students, 2017-2018, Lecturer <sup>4</sup>.
- **Advances and Applications in Fluid Dynamics for Aeronautical Engineering** (using ANSYS), University of Brighton, 3rd year course, class size: 80 students, 2017-2018.
- **Dynamics and Control** (using Matlab and Simulink), University of Brighton, 3rd year course,

- class size: 80 students, 2017-2018.
- **Flight Dynamics and Control**, University of Brighton, 3rd year course, class size: 80 students, 2017-2018.
  - **Engineering Project**, University of Brighton, Foundation year course, class size: 25 students, 2017-2018.
  - **Fluid Dynamics**, University of Brighton, 2nd year course, class size: 180 students, 2015-2017, Lecturer<sup>4</sup>.
  - **Engineering Simulation**, University of Brighton, 3rd year course, class size: 80 students, 2017.
  - **Engineering Concepts**, University of Brighton, 1st year course, class size: 230 students, 2016-2018.
  - **Aircraft and Automotive Systems**, University of Brighton, 1st year course, class size: 50 students, 2017.
  - **Mathematical Biology, Doctoral Training Centre**, University of Oxford, postgraduate course, class size: 15 students, 2014, lecturing and case study.
  - **Applied Complex Variables**. University of Oxford, postgraduate course, Hilary Term, class size: 10 students, 2012-2013, Class tutor<sup>2</sup>.
  - **Mathematical Modeling**. King Abdullah University of Science and Technology, Saudi Arabia, postgraduate course, class size: 10 students, 2011-2012, Teaching Assistant<sup>1</sup> (including lecturing of a part of the course).
  - **Techniques of Applied Mathematics**. University of Oxford, 2 groups (3rd year course), Michaelmas Term, class size: 10 students, 2011-2012, Class tutor<sup>2</sup>.
  - **Waves and Compressible Flow**. University of Oxford, 2 groups (3<sup>rd</sup> year course), Hilary Term, class size: 10 students, 2010-2011, Class tutor<sup>2</sup>.
  - **Mathematical biology and ecology**. University of Oxford, UK, 2 groups (3<sup>rd</sup> year course), Michaelmas Term, class size: 10 students, 2010-2011, Class tutor<sup>2</sup>.
  - **Mathematics for Engineers, Calculus (two years course)**. University of Limerick, Ireland, 3 groups (1<sup>st</sup>-2<sup>d</sup> year course), class size: 30 students, 2007-2008/2008-2009/2009-2010, Class tutor<sup>3</sup>.
  - **Mathematics for gifted children**. Moscow State University, Russia, specialized courses for 12-14 years old school children, class size: 30 students, 2002-2003/2003-2004, Teacher.

## GRANTS, AWARDS, SCHOLARSHIPS

- School Research Allocation (Internal research grant of Brighton University, School of Computing, Engineering and Mathematics, 2018/2019)
- Oxford University Award for outreach in Science and Mathematics (2014)
- Funding from New Jersey's Science & Technology University to participate at the 27<sup>th</sup> Annual Mathematical Problems in Industry Workshop, 2011, USA. (\$1400)
- OCCAM Visiting Studentships, 2009, to work as a visitor at University of Oxford for 3 weeks. (£700)
- Centro Internazionale Matematico Estivo award to participate to the Spring School “Analytical

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<sup>1</sup> I assisted Oxford's professors who lectured in KAUST and remotely from Oxford via a camera. I held office hours and did lecturing of a part of the course.

<sup>2</sup> I taught weekly classes (review of the theory from lectures and solution of the related problems); graded homework; advised my TA; wrote reports on the students and the TA. (TA's role was to mark homework and to solve one problem in the class.)

<sup>3</sup> I taught weekly classes (review of the theory from lectures and solution of the related practical problems); held office hours and graded exams.

<sup>4</sup> I provide weekly lectures, grade homework, hold office hours, prepare and grade exams.

and Numerical Aspects of Evolution Equations”, 2009, Technische Universität Berlin, Germany (€600)

- Centro Internazionale Matematico Estivo award to participate to EMS-CIME course on Mathematical models in the manufacturing of glass, polymers and textiles, 2008, Italy (€2500)
- The Lomonosov Prize, awarded in 2005, for the highest average score (5.0 out of 5.0) achieved by a graduate of the Moscow State University.
- The “GARANT” Scholarship, awarded in 2005.
- “The National Savings Bank” Scholarship, awarded in 2003 and 2004, for the highest grades achieved third- and fourth-year mathematics students of the Moscow State University.