

Tomáš Starý

College of Engineering, Mathematics and Physical Sciences, University of Exeter

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Education

University Degrees.....

PhD in Applied Mathematics

University of Exeter, United Kingdom 2013–2014

- Mathematical and Computational Study of Markovian Models of Ion Channels in Cardiac Excitation
- advised by Prof. Vadim N. Biktashev

Master in Biomedical Engineering

Polytechnic University of Valencia, Spain 2009–2011

Average weighted grade: 7.50/10

- Major in Bioelectricity and Biomedical Engineering

Student of Spanish Language in Commercial Sphere

University of Ostrava, Czech Rep. 2007–2008

Finished first year, then terminated due to long-term stay in Spain

Degree in Electrical Engineering

VSB–Technical University of Ostrava, Czech Rep. 2006–2009

Average weighted grade: 7.63/10

- Major in Biomedical Engineering

Courses and Workshops.....

PETSc Tutorial

IT4Innovations, Ostrava, Czech Rep. 21–22 May 2015

- Course on The Portable Extensible Toolkit for Scientific computing (PETSc)

Summer School on Parallel Computing

Inter-university consortium CINECA, Casalecchio di Reno, Italy 5–16 Sep 2011

- Programming course for parallel in time computing
- libraries OpenMP and MPI, CVODE, SCALAPACK, FFT, PETSc, Boost

English Course and Travels

Auckland, New Zealand Nov, Dec 2011

Work Experience

Research.....

Postdoctoral Research Associate

Exeter Technologies Group, United Kingdom since Sep 2016

- Simulation of manufacturing of composite materials
- Development of solvers for partial differential equations (PDEs) of continuum mechanics

Internship in Cardiac Modelling Lab

Institute of Bioengineering and Human Centred Technology, Spain

Sep – Dec 2012

- Simulations of electro-physiological properties of 1D strand of ventricular tissue

Erasmus Internship

Laboratory of Bioengineering, Electronics and Informatics, Italy

Mar – Sep 2011

- Data-driven optimisation of parameters in IKs Markov chain model

Teaching

Demonstrations and marking

University of Exeter, UK

Sep – Dec 2013, 2014, 2015

Module Programming for Science and Business (Python programming language)

Administrative

Organiser of Dynamics Reading Group meeting

University of Exeter

Sep 2013 – Jun 2015

Representative in Student and Staff Liaison Committee

University of Exeter

May 2013 – Sep 2015

Training

Practical training in health facilities

University Hospital of Ostrava, Czech Rep.

Jun 2007 – Jun 2008

- Practical training within Centres of: Haemodialysis , Neonatal Incubation, Mechanical Pulmonary Ventilation, Nuclear Medicine, Burn Therapy, Hyperbaric Chamber Therapy
- Assisting clinical check-up by EEG, ECG, Endoscopy, X-Ray Computed Tomography, Magnetic Resonance, Sonography, Positron Emission Tomography
- Assisting laparoscopic surgery of abdomen, coronary stent placement and cardiac pacemaker placement

Final degree project

University Hospital of Ostrava, Czech Rep.

Sep 2008 – Jun 2009

- Participating on implementation of a system for glucose testing in blood samples
- Documentation of blood glucose testing of patients

Others

Lifeguard in swimming pools of city council

Jellie Park and Pioneer Leisure Center, Christchurch, New Zealand

Feb – Jun 2012

- Gained certificates in First Aid and Cardiac defibrillation

Waiter and Chefs' assistant

Little India Restaurant, Auckland, New Zealand

Dec 2011 – Feb 2012

- Complementary work experience to an English course

Summer Work Experience

Lifeguard on beaches and in swimming pools, Spain

Summers 2006, 2007, 2008, 2009

- This allowed me to practise and improve my Spanish language

Awards and Scholarships

Travel grant for Early Careers Mathematician Conference

University of Exeter

£191.00

6 Mar 2016

PhD Scholarship

University of Exeter

£61,114.00

Jan 2013–Jun 2016

Maintenance, Travel Budget and Tuition Fees	
Travel Grant for Computer Science Colloquium	£47.00
<i>London Mathematical Society</i>	<i>18 Sep 2015</i>
Travel Grant for English language course in New Zealand	€2,400.00
<i>Spanish Ministry of Education</i>	<i>Nov 2011</i>
Participation grant for Summer School in Parallel Computing	€500.00
<i>Supercomputing Consorciium CINECA</i>	<i>Sep 2011</i>
Student Exchange at University of Bologna	€3,600.00
<i>Erasmus Programme</i>	<i>Mar – Aug 2011</i>
Master's Scholarship	€6,843.00
<i>Spanish Ministry of Education</i>	<i>2009, 2010</i>

Conferences and Presentations

Dynamics Reading group, University of Exeter: oral	<i>5 Jul 2016</i>
BAMC 2016, Oxford University: oral	<i>8 Apr 2014</i>
Computers in Cardiology, Nice, France: oral	<i>9 Sep 2015</i>
Visit in Penryn Campus, University of Exeter: poster	<i>23 Jun 2015</i>
SIAM meeting, University of Bath: poster	<i>8 Jan 2014</i>
PGR Conference University of Exeter: oral	<i>8 Oct 2014</i>
BioDynamics Workshop, University of Exeter: poster	<i>24 Jun 2014</i>
Dynamics Reading group, University of Exeter: oral	<i>7 May 2014</i>
BAMC 2014, Cardiff University: poster	<i>29 Apr 2014</i>

Publications

- Journal articles.....
- Antonioletti, M; Biktashev, VN; Jackson, A; Kharche, SR; **Starý, T**; Biktasheva, IV. BeatBox — HPC Environment for Biophysically and Anatomically Realistic Cardiac Simulations.. *Submitted to PLoS ONE* arXiv:1605.06015
 - **Starý, T**; Biktashev, VN . Exponential integrators for a Markov chain model of the fast sodium channel of cardiomyocytes. *IEEE Trans. BME* 2015 62(4):1070-1076; DOI:10.1109/TBME.2014.2366466.
 - Kharche, SR; **Starý, T**; Colman, MA; Biktasheva, IV; Workman, AJ; Rankin, AC; Holden, AV; Zhang, H. Effects of human atrial ionic remodelling by β -blocker therapy on mechanisms of atrial fibrillation: a computer simulation. *Europace* 2014 16:1524–1533
 - Moreno, C; de la Cruz, A; Oliveras, A; Kharche, SR; Guizy, M; Comes, N; **Starý, T**; Ronchi, C; Rocchetti, M; Baró, I; Loussouarn, G; Zaza, A; Severi, S; Felipe, A; Valenzuela, C. Marine n-3 PUFAs modulate IKs gating, channel expression, and location in membrane microdomains. *Cardiovasc Res* 2015 105:223-232
- Conference Publications.....
- **Starý, T**; Biktashev, VN. Evaluating Exponential Integrators for Markov Chain Ion Channel Models. *Computing in Cardiology* 2015 42:885-888
 - Kharche, S; Callisesi, G; **Starý, T**; Bracci, A; Severi, S. Simulating Effects of Extracellular Potassium on ECG. *Computing in Cardiology* 2012 39: 225-228

Abstract publications.....

- **Starý, T**; Biktashev, VN. Analysis of Numerical Methods for Markov Chain Models of Ionic Channels. *British Applied Mathematics Colloquium, Oxford* Apr 2016
- **Starý, T**; Biktashev, VN. Evaluating Exponential Integrators for Markov Chain Ion Channel Models. *Dynamics Days, Exeter* Sep 2015
- **Starý, T**; Biktashev, VN. Practical methods of solving Markov chain type ion current models. *BioDynamics workshop, University of Exeter* Jun 2014
- **Starý, T**; Biktashev, VN. Dynamical Properties of Markov Chain Cardiac Ion Channel. *Computational Cardiac Electrophysiology workshop, Imperial College* May 2014
- **Starý, T**; Biktashev, VN. Practical methods of solving Markov chain type ion current models. *British Applied Mathematics Colloquium* April 2014
- Kharche, S; **Starý, T**; Biktasheva, IV; Zhang, H; Biktashev, VN. The Role of Fibre Orientation in Cardioversion of Chronic Atrial Fibrillation: A Simulation Study. *Journal of Electrocardiology* 2013 46(4), e6-e71
- Moreno, C, Kharche, S, **Starý, T**, de la Cruz, A; Severi, S, Valenzuela, C. Effects of n-3 polyunsaturated fatty acids on the function, expression and localization of Kv7.1 channels. *European Society of Cardiology Proceedings* 2012
- Kharche, S; **Starý, T**; Callisesi, G; Bracci, A; Severi, S. Correlating Serum Potassium Levels to ECG: A Simulation Study. *Proc Physiol Soc* 2012 27, PC27

Thesis.....

- **Starý, T** advised by Biktashev, VN. Mathematical and Computational Study of Markovian Models of Ion Channels in Cardiac Excitation. *PhD thesis at University of Exeter*. 2016
- **Starý, T** advised by Severi, S; Kharche, S; Ferrero De Loma-Osorio, JM. Simulating the Effects of Polyunsaturated Fatty Acids on Human Slowly Activating Delayed Rectifier Potassium Channel (KCNQ1 – KCNE1). *Master degree thesis at Polytechnic University of Valencia*. 2011
- **Starý, T** advised by Gajovský, M; Tiefenbach, P. Complex uniform glucose metering [of] patient[s]. *Bachelor degree thesis at VSB – TU Ostrava*. 2009

Skills

Software.....

Operating system: GNU, Linux, Emacs, bash

Programming languages: C/C++, Python, Perl, Octave (Matlab), basics of: Fortran

Programming tools: GNU build system (Autotools), GNU compiler collection (gcc), GNU debugger (gdb), version control systems (git, subversion)

Text mark-up: \LaTeX , HTML+CSS, XML, LibreOffice

Data processing: gnuplot, matplotlib, awk, sed

Graphics: Inkscape, GIMP, ImageMagic, PStricks, TikZ

Networks: ssh, ftp, mpd, gpg encryption

Languages.....

- Czech (native)
- Spanish (fluent)
- Italian (basic)
- English (fluent)
- German (elementary)

Other Interests.....

Electronics: Arduino, Raspberry Pi

Sports: distance running, climbing, swimming, hiking, kayaking, surfing, cycling

List of Referees

Prof. Vadim N. Biktashev

Institution: College of Engineering, Mathematics and Physical Sciences
University of Exeter

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North Park Road
Exeter, EX4 4QF, UK

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Prof. José M. Ferrero

Institution: Centro de Investigación e Innovación en Bioingeniería (Ci2B)
Universidad Politécnica de Valencia (UPV)

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Prof. Stefano Severi

Institution: Computational Physiopathology Unit
Laboratory of Cellular and Molecular Engineering "Silvio Cavalcanti"
Department of Electrical, Electronic and
Information Engineering "Guglielmo Marconi"
University of Bologna

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