

## Valentin S. Petrov, PhD

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### FIELD OF INTEREST

Nonlinear dynamics, synchronization theory, bifurcation theory, computer modeling, parallel computing, Message Passing Interface, infiniband, collectives, Computer Vision, algorithms, cardiomodelling

### EDUCATION

- 10/2011 - 02/2012: Master Class program Business English, Advanced
- 06/2011 : PhD Thesis defense in Physics-and-Mathematics
- 06/2008 - 06/2011: PhD student in Nizhny Novgorod State University, Nizhny Novgorod Russia
- 09/2003 - 06/2008: Student of the radio-physics faculty of Nizhny Novgorod State University
- 09/2005 - 06/2008: student of the NNSU additional educational center, the English language course, specialization Translator in the sphere of the professional communication (Diploma #020487)

### PROFESSIONAL EXPERIENCE

- 05/2014 - 09/2015: *Senior Software Engineer at Intel*
  - IntelMPI library (research, path-finding, development, optimization, benchmarking for high performance production MPI implementation)
- 03/2011 - 05/2014: *Software Engineer at Itseez (<http://itseez.com>)*
  - Software development for Mellanox (MPI Collective operations library FCA 3.0/HCOLL, OpenSHMEM, UPC/Gasnet)
  - ADAS - advanced driver assistance - real time traffic sign recognition with OpenCV
- 12/2004 - 12/2007: *Intern Engineer at Joint Stock Company "Afrikan-tov Experimental Design Bureau for Mechanical Engineering"*
  - FEM simulation and analysis with ANSYS

## ACADEMIC EXPERIENCE

- 10/2010-11/2010: Visiting researcher, Golm University of Physics, Germany
- 10/2009-11/2009: Visiting researcher, Leuven University, Belgium
- 05/2009-06/2009: Visiting researcher, Golm University of Physics, Germany
- 09/2008-12/2008: Visiting researcher, Leuven University, Belgium
- 06/2007-07/2007: Visiting researcher, Leuven University, Belgium

## SKILLS

*Programming Languages:* C, C++, Python

*Mathematical toolkits:* Matlab, Octave, ANSYS

*Parallel programming:* MPI, Shmem, UPC/Gasnet, Nvidia CUDA, TBB, OpenMP, Intel Parallel Studio

*Tools:* Mercurial/Git, Gdb, perf, gerrit, autotools, ClearQuest, Redmine

*APIs:* verbs, psm, portals, rdmacm

*English:* fluent

*Others:* Latex

## AWARDS

- Intel DPD Award, for valuable contribution into OpenFabric Interface, 2015
- Winner of the scholarship of Academician GA Razuvaev, 2009-2010
- Winner of the scholarship of Academician GA Razuvaev, 2010-2011
- Winner of the Russian Federation President Scholarship, 2010-2011

## PUBLICATIONS

### Papers

1. V.N. Belykh, V.S. Petrov, G.V. Osipov, Dynamics of the Finite-dimensional Kuramoto Model: Global and Cluster Synchronization, Regul. Chaotic Dyn. (2015), 20 (1), pp. 37-48.
2. V. S. Petrov and G. V. Osipov. Interaction-based transition from passivity to excitability. Phys. Rev. E 90, 032916 (2014).
3. Di Lang, MS, Valentin Petrov, PhD, Qing Lou, PhD, Grigory Osipov, PhD, Igor R. Efimov, PhD. Spatiotemporal control of heart rate in a rabbit heart. Journal of Electrocardiology 44 (2011) 626-634.
4. V. S. Petrov, G. V. Osipov, and J. Kurths. Distant synchronization through a passive medium, Physical Review E (82) 026208, (2010).
5. V. S. Petrov, G. V. Osipov, and J. Kurths. Fibroblasts alter spiral wave stability, Chaos (20) 045103 (2010).

6. A.K. Kryukov, V.S. Petrov, L.S. Averyanova, G.V. Osipov, W. Chen, O. Drugova and C.-K. Chan. Synchronization phenomena in mixed media of passive, excitable and oscillatory cells. *Chaos* (13) 037129, 2008.
7. V.N. Belykh, G.V. Osipov, V.S. Petrov, J. Suykens, J. Vandewalle. Cluster synchronisation in oscillatory networks. *Chaos* (13) 037106, 2008
8. V.S. Petrov, G.V. Osipov and J. A.K. Suykens. Influence of passive elements on the dynamics of oscillatory ensembles of cardiac cells. *Phys. Rev. E* (79) 046219, 2009
9. G. V. Osipov, O. I. Kanakov, C.-K. Chan, J. Kurths, S. K. Dana, L. S. Averyanova, V. S. Petrov. Synchronization Phenomena in Networks of Oscillatory and Excitable Luo-Rudy Cells. "Complex Dynamics in Physiological Systems: from heart to brain". Springer Science+Business Media B.V. 2009, p. 107-126.

## Conference Proceedings

1. V.S. Petrov, G.V. Osipov, O.I. Kanakov, C.K. Chan, J. Kurths. Formation of synchronous clusters in networks of cardiac cells. // Proceedings of 3rd International IEEE Scientific Conference on Physics and control (Physcon 2007), September 3rd-7th 2007 at the University of Potsdam, 2007, 1369–1373.
2. V.S. Petrov, G. V. Osipov, O. I. Kanakov, C.-K. Chan. Synchronous regimes in networks of cardiac cells. // Book of abstracts. International symposium on Synchronization in complex networks, SynCoNet 2007, July 2-4, Leuven, Belgium.
3. V.S. Petrov, G.V. Osipov, J. A.K. Suykens. Wave dynamics of oscillatory ensembles under the influence of passive elements // Proceedings of 17th International Workshop on Nonlinear Dynamics of Electronic Systems 2009, Rapperswill, Switzerland, p. 82-85.
4. V.S. Petrov Influence of passive elements on the synchronization properties of oscillatory ensembles, Proceedings of the International Symposium on Complex Dynamical Systems and Applications, Digha, India, December 4-6, 2009.
5. V.S. Petrov Collective dynamics in mixed media of oscillatory, excitable and passive cells, international conference Nonlinear Dynamics in Biological Systems, Taipei-Kenting, Taiwan, 2009