

76 Elm st. apt 114
Jamaica Plain, MA 02130
(h) 617-524-0374 (m) 510-604-1688

shokhirev@gmail.com
<http://www.shokhirev.com/kirill>

Kirill N. Shokhirev, Ph.D.

Research Interests	Mathematical, statistical, and computational modeling of complex systems
Skills	Analysis, modeling and numerical simulation of biological and physical systems. Scientific programming using MATLAB, C++, Fortran in Windows and Linux environments
Education	1997 - 2005 University of California Berkeley, CA PhD Program in Physics <ul style="list-style-type: none">• MA Physics, May 2000• PhD Physics, December 2005 Thesis: Estimation of the orientation of short lines with a realistic population of cortical neurons Advisor: Prof. Donald A. Glaser
	1994 - 1997 University of Arizona Tucson, AZ BS in Physics and Mathematics
	1992 - 1994 Novosibirsk State University Novosibirsk, Russia Undergraduate program in Physics
Professional Experience	Present Physical Sciences Inc. Andover, MA Consultant <ul style="list-style-type: none">• Developed and tested data fusion algorithms and simulation environment for detection and localization of radiological sources in an urban environment• Advanced data fusion optimization methods for Chemical-Biological sensor networks by utilizing information-theoretical analysis, algorithm development and numerical simulation 2006 - 2008 Magma Design Automation San Jose, CA Member of Technical Staff (research engineer) <ul style="list-style-type: none">• Developed computational methods and algorithms for simulating optical and diffusion phenomena in micro-lithography• Developed calibration framework for testing model results against experimental data. Implemented original algorithms (C++ and MATLAB) and integrated new code with existing software

1997 - 2005 University of California Berkeley, CA

Postdoctoral researcher

- Modeled orientation estimation in human visual cortex
- Developed parallel computational tools for studying the visual system

Graduate Student Researcher

- Investigated interaction among cortical feature maps and their influence on orientation perception and motion detection
- Analyzed models of population coding and information processing in the human visual system
- Designed algorithms and computer software for large-scale simulation of populations of interacting neurons
- Developed probabilistic models of visual illusions

Graduate Student Instructor

- Assisted in teaching of an upper-division course on computational modeling of biological systems
- Developed new instructional materials and methods. Supervised the computer laboratory for the course

Graduate Student Researcher

- Developed theoretical models and data analysis software for ultra-low temperature experiments on Josephson effect in superfluid ³He.

Publications

Shokhirev K. N., Kumar T., & Glaser D. A. Cortical feature maps and the population vector estimator of orientation. *in preparation*

Shokhirev K. N., Kumar T., & Glaser D. A. The influence of cortical feature maps on the encoding of the orientation of a short line. *Accepted for publication: Journal of Computational Neuroscience*

Shokhirev, K. N., Kumar, T., & Glaser, D. A. (2003). Estimation of the parameters of a visual stimulus from the responses of a realistic population of model visual neurons [Abstract]. *Journal of Vision*, 3(12), 81a, <http://journalofvision.org/3/12/81/>, doi:10.1167/3.12.81.

Shokhirev K N, Glaser D A Interaction among cortical maps [Abstract] NEUROCOMPUTING 44: 993-1000 JUN 2002

Dharmasena G, Phillips TR, **Shokhirev KN** Parker GA, Keil M Vibrationally and rotationally resolved angular distributions for F+H₂ -> HF(v, j) + H reactive scattering. JOURNAL OF CHEMICAL PHYSICS 106(23): 9950-9953 JUN 15 1997

References

References are available upon request

Citizenship

USA

Keywords

MATLAB, C, C++, Java, FORTRAN, MPI, distributed computing, data analysis, data fusion, algorithms, numerical model, scientific programming, simulation, vision, neuroscience, image processing, computational biology , Windows, Linux, Eclipse

