

Sergey Kuznetsov, PhD

Contact Information	Department of Civil Engineering Johns Hopkins University 3400 N. Charles St., Latrobe, 307 Baltimore, MD 21218	Voice: 518-542-5296 Email: sergkuznet@jhu.edu
Citizenship	RUSSIA	
Research Interests	Computational Solid Mechanics, Materials with Heterogeneous Micro- and Nanostructure, Multiscale Multiphysics Modeling, Asymptotic Methods of Nonlinear Mechanics, Magneto- and Electromechanical Coupling, Microstructure Optimization, Rigid Body Dynamics in Force Fields, Method of Irreducible Tensors, Method of Multipole Expansions, Finite Elements Method.	
Honors and Awards	FULBRIGHT SCHOLARSHIP (2007), FIRST PRIZE on the 11-th Session of Junior Scientists, Mathematical Sciences. Nizhniy Novgorod, Russia, 2006	
Education	COLUMBIA UNIVERSITY , New York, NY, USA PhD in Civil Engineering and Engineering Mechanics (January 9 th , 2012) Dissertation topic: " <u>Homogenization Methods for Problems with Multiphysics, Temporal and Spatial Scale Coupling</u> " Adviser: Dr. J. Fish NIZHNIY NOVGOROD STATE UNIVERSITY , Nizhniy Novgorod, Russia M.S. in Applied Mathematic and Informatics , June 2005 Dissertation Topic: " <i>Dynamics of a superconducting rotor in non-contact magnetic suspension</i> " Adviser: Dr. Sci. V. V. Novikov, Dr.Sci. Yu. M. Urman NIZHNIY NOVGOROD STATE PEDAGOGICAL UNIVERSITY , Nizhniy Novgorod, Russia B.Ed. in Physics , July 2003	
Academic Experience	JOHNS HOPKINS UNIVERSITY 2012-PRESENT POSTDOCTORAL FELLOW Computational Materials Design – microstructure topology optimization of woven lattice structure to improve electrical, thermal and mechanical properties to fit specific application. Adviser: Dr. J. K. Guest. RENSELAER POLYTECHNIC INSTITUTE , 2007-2011 and COLUMBIA UNIVERSITY , 2011-2012 GRADUATE RESEARCH ASSISTANT Developing homogenization methods for multiscale modeling of solids media with heterogeneous microstructure; Solving multiscale problems; Developing Fortran subroutines for Abaqus, Matlab and Fortran codes for multiscale problems. N. I. LOBACHEVSKY STATE UNIVERSITY OF NIZHNIY NOVGOROD and NIZHNIY NOVGOROD STATE PEDAGOGICAL UNIVERSITY , Nizhniy Novgorod, Russia, 2005-2007 TEACHING ASSISTANT <ul style="list-style-type: none">- Mechanics and Physics (Laboratory), Computational physics, Computer modeling;- Mentoring undergraduate student projects .	

Computer skills: **PACKAGES:** Abaqus(proficient, writing various subroutines uel, vuel, mpc, umat, disp, etc, python scripts to create and modify models, postprocessing), Comsol(basics), Matlab(proficient), Maple(proficient)
LANGUAGES: Fortran, C, Python

List of Publications

1. Yu. M. Urman, S. I. Kuznetsov, "Translational transformations of tensor solutions of the Helmholtz equation and their applications to describe interactions in force fields of different physical nature", to appear in Quarterly of Applied Mathematics, 2013
2. [J. Fish, V. Filonova, S. Kuznetsov, "Micro Inertia Effects in Nonlinear Heterogeneous Media" , Int. J. Numer. Meth. Engng, vol. 91\(13\), pp. 1406-1426, Sep. 2012.](#)
3. [S. Kuznetsov and J. Fish, "Mathematical Homogenization Theory for Electroactive Continuum" , Int. J. Numer. Meth. Engng, vol. 91\(11\), pp. 1199-1226, Sep. 2012.](#)
4. [J. Fish and S. Kuznetsov, "Computational continua," Int. J. Numer. Meth. Engng, vol. 84\(7\), pp. 774-802, 12 NOV 2010 2010.](#)
5. [J. Fish and S. Kuznetsov, "From Homogenization to Generalized Continua" , Int. J. Comp. Meth. Engng. Sc. Mech., 13\(2\), pp. 77-87, Feb. 2012, DOI:10.1080/15502287.2011.654174](#)
6. [S. I. Kuznetsov, et al., "Effect of periodic changes in the shape of a superconducting body on its dynamics in a noncontact magnetic suspension " Technical Physics, vol. 53, pp. 1529-1535, 2008.](#)
7. [S. I. Kuznetsov and Y. M. Urman, "Effect of Vibrations of a Magnetic Suspension on the Dynamics of a Superconducting Spherical Rotor," VESTNIK OF LOBACHEVSKY STATE UNIVERSITY OF NIZHNI NOVGOROD, pp. 130-137, 2007.](#)
8. [S. I. Kuznetsov and Y. M. Urman, "Levitation of a superconducting body in the field of N magnetic poles," Technical Physics, vol. 51, pp. 297-306, 2006.](#)
9. Kuznetsov S. I., Urman Yu. M., "On the possibility of levitation of superconducting sphere in the field of circular magnet"//Bulletin of N. I. Lobachevsky State University of Nizhni Novgorod, Mechanics series, vol 1(7), 2006, p. 5-14.
10. Urman Yu. M.,Kuznetsov S. I., "Maple: package for analytical computations" – textbook for students of physical department, published in Nizhniy Novgorod State Pedagogical University in 2005.
11. Urman Yu. M., Kuznetsov S. I. "On the possibility of passive damping of nutational vibrations of a superconducting rotor using London's moment " //Bulletin of N. I. Lobachevsky State University of Nizhni Novgorod, Mechanics series, Vol. 1(6). 2004. p. 25-31.

Conference Presentations and Proceedings

1. Sergey Kuznetsov, Seung-Hyun Ha, James K. Guest, "*Design of 3d Woven Materials with Optimized Multifunctional Behavior*", WCSMO-10, Orlando, FL, USA, May 19-19, 2013
2. Kuznetsov, J. Fish, "*Mathematical Homogenization Theory for Electroactive Continuum*", 11th USNCCM, Minneapolis and St. Paul, Minnesota, USA, July 25-28, 2011
3. S. I. Kuznetsov, Yu. M. Urman, "*The influence of periodic shape changes of a diamagnetic body on its dynamics in non-contact magnetic suspension*"//Proceedings of International Conference "Classical problems on the dynamics of a rigid body", Donetsk, Ukraine, 2007, p. 77
4. Yu. M. Urman, S. I. Kuznetsov, "*On possibility of magnetic levitation in magnetic suspension*"//Proceedings of IX international conference "Physics in the system of contemporary education", Saint Petersburg, Russia, 2007, Vol 1, p. 281-283
5. S. I. Kuznetsov, Yu. M. Urman, "*The investigation of dynamics of quasispherical superconducting rotor in the field of permanent magnets*", IX-th all-Russia Congress on Theoretical and Applied Mechanics, 22-28 of August 2006, Nizhniy Novgorod.
6. Kuznetsov S. I. "*About magnetic levitation*" //11-th session of junior scientists, mathematical sciences, Nizhniy Novgorod, 2006 – this presentation was awarded with First Prize.
7. Urman Yu. M., Kuznetsov S. I., "*The damping effect of London's moment on nutational oscillations of superconducting rotor*"//The Proceedings of VII All-Russia Scientific conference "Nonlinear oscillations of mechanical systems", Nizhniy Novgorod, 19-22 of September, 2005, P. 385-387
8. Urman Yu. M., Kuznetsov S. I. "*About possibility of creation non-contact suspension of superconducting rotor formed by system of permanent magnets.*"//The Proceedings of VII All-Russia Scientific conference "Nonlinear oscillations of mechanical systems", Nizhniy Novgorod, 19-22 of September, 2005, P. 388-390
9. Urman Yu. M., Kuznetsov S. I. "*Damping Effect of London's moment on the nutational vibrations of superconducting rotor*" //Transactions of VII All-Russia scientific conference "Nonlinear oscillations of mechanical systems", Nizhniy Novgorod, 19-22, September, 2005, p. 385-387.
10. Olkhovskaya E. A., Shilina N. T., Kuznetsov S. I. "*The improvement of methods for analysis the results of circadian monitoring of a blood pressure: Visual Oriented Representation*" //The proceedings of the III'rd international Conference of Young Scientists "Fundamental sciences and progress in clinical medicine", The research center of I.M. Sechenov Moscow Medical Academy, Moscow, Russia. Jan. 20-24. 2004. P 141.
11. Kuznetsov S. I., Urman Yu.M. «*Study of equations on nonlinear oscillator in mathematical package Maple*», Abstracts of IV All-Russian scientific-practical conference of students and young scientist «The actual questions in development of education and production. », VSEPA, 29-30 of may 2003, p. 167-168.