

Viktorina Averina

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ACADEMIC PREPARATION

PhD in Applied Mathematics, Department of Mathematics, University of Minnesota, Twin Cities, starting September 2003

M.S. in Mathematics, College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks, August 2002

- Concentration: Delay-differential equations, numerical analysis
- Thesis: Symbolic Stability of Time-Periodic Differential-Delay Equations
- Advisor: Dr. Edward Bueler

B.S. in Professional Education with Specialization in Mathematics and Computer Science, College of Natural Sciences, Saint-Petersburg Institute of Fine Mechanics and Optics (Technical University), Russia, 2000

- Concentration: Mathematics and Computer Science education
- Thesis: Professional Computer Technology Education (on the example of preprinting preparation of issues)
- Advisor: Dr. Natalya Gusarova

200-hour Course in Business and Marketing, Educational Services International, Inc., Saint-Petersburg University of Fine Mechanics and Optics, Russia, 1999

- Graduated with honors
- Winner of the business plan competition

RESEARCH SKILLS

- Extensive experience with programming in Mathematica
- Experienced in programming in MatLab

RELEVANT COURSE WORK

- Mathematical Modeling
- Mathematical Statistics
- Numerical Analysis and Scientific Computing
- Theory of Ordinary, Partial, and Delay Differential Equations
- Numerical Linear Algebra
- Programming (Pascal, C)

CURRENT RESEARCH INTERESTS

- Symbolic and numeric stability and bifurcation analysis of differential-delay equations
- Dynamical systems

PROFESSIONAL EXPERIENCE

Workshop Participant, August 2004

Institute for Mathematics and its Applications and The Boeing Company

Supervisor: Dr. Grandine, thomas.a.grandine@boeing.com

- Implemented new method of surface registration for applications in airframe industry
- Demonstrated an ability to complete assignments on time and effectively work in a team

Intern, May 2004

Ford Research and Advanced Engineering, Ford Motor Company

Supervisor: Dr. Kolmanovsky (313) 845-1040

- Devised a method to automatically schedule air-to-fuel ratio feedback controller gains as functions of engine operating conditions for gasoline internal combustion engines

Research Assistant, June 2003 - August 2003

University of Alaska Fairbanks

Supervisor: Dr. Bueler (907) 474-7693, Dr. Butcher (907) 474-5649

- Continued working on research project on stability of delay differential equations

Graduate Research Assistant, January 2002 - August 2002

College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks

Supervisor: Dr. Bueler (907) 474-7693

- Created an ongoing program applying theoretical findings to produce actual results on the topic of "Symbolic Stability and Bifurcation Analysis of Time-Periodic Differential-Delay Equations"
- Showed an ability to apply knowledge of math and programming to untested mathematical theoretical problems

Student Assistant, May 2001 - June 2001

College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks

Supervisor: Dr. Caldwell (907) 474-2479

- Took an active part in a survey on the education quality in Alaskan high schools
- Sorted and entered data and performed statistical analysis on the data

TEACHING EXPERIENCE

Teaching Assistant, September 2003 - May 2005

Department of Mathematics, University of Minnesota Twin Cities

Supervisor: Dr. Miracle (612) 625-2095

- Taught 'IT Calculus I', 'IT Calculus II', 'Linear Algebra and Differential Equations', and 'Multivariable Calculus' with use of *Matlab* and *Mathematica* as a part of a course

Calculus II Lecturer, June 2003 - August 2003

Summer Sessions, University of Alaska Fairbanks

Visiting Instructor of Mathematics, September 2002 - August 2003

Department of Mathematics, Knox College, Illinois

- Taught 'Functions and Calculus', 'Calculus I', 'Calculus II' and 'Differential Equations' classes with extensive use of *Mathematica* as a part of a course
- Participated in curriculum development
- Directed and participated in creation of Rothwell Stephens Scholarship and Carr Prize examinations

Precalculus Instructor, Fall Semester 2001

College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks

Calculus I Instructor, Summer Semester 2001

College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks

Calculus I Recitations Instructor, Fall Semester 2000 and Spring Semester 2001

College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks

Supervisor: Mr. Getz (907) 474-5445

MathLab Tutor, September 2000 - August 2002

College of Sciences, Engineering, and Mathematics, University of Alaska Fairbanks

- Tutored students one on one and in small groups in Mathematics, Statistics and Physics for classes ranging from freshman to senior levels

HONORS AND AWARDS

- Graduated from St. Petersburg University of Fine Mechanics and Optics with red diploma (an equivalent of 4.0 GPA in Russian college education)
- Graduated from High school with gold medal (an equivalent of 4.0 GPA in Russian secondary education)
- Won several competitions in Math, CS and Physics in high school

PUBLICATIONS

1. **Effect of Delay on Engine Air-to-Fuel Ratio Control.** With Ilya Kolmanovsky, Ed Bueler, and Alex Gibson. Submitted to IEEE Conference on Control Applications in Toronto, 2005.
2. **Surface Registration via Umbilical Points.** With Thomas Grandine, Jung-ha An, Giulio Ciralo, Wondimagegnehu Geremew, Derek Hansen, Guo Luo, Todd Moeller. <http://www.ima.umn.edu/talks/workshops/MM8.9-18.04/team3/report.pdf>
3. **Periodic Linear DDEs: Collocation Approximation to the Monodromy Operator.** With Ed Bueler and Eric Butcher. In progress.
4. **Stability of Linear Time-Periodic Delay-Differential Equations Via Chebyshev Polynomials.** With Eric Butcher, Haitao Ma, Ed Bueler, and Zsolt Szabo. International Journal for Numerical Methods in Engineering, v.59, issue 7, pp 895-922, 2004.
5. **Delayed State Feedback And Chaos Control For Time-Periodic Systems Via a Symbolic Approach.** With Haitao Ma, Venkatesh Deshmukh, and Eric Butcher. Communications in Nonlinear Science and Numerical Simulation, Vol. 10, Iss. 5, 2005.
6. **Stability Analysis of Parametrically Excited Systems with Time-Delay.** With Zsolt Szabo. Eric Butcher, Haitao Ma, and Ed Bueler. Proceedings of 19th Biennial Conference on Mechanical Vibration and Noise, ASMEDETC 03, VIB-48574, Chicago, IL, Sept. 2-6, 2003.
7. **Controller Design for Linear Time-Periodic Delay System Via a Symbolic Approach.** With Haitao Ma, Venkatesh Deshmukh, and Eric Butcher. Submitted to the American Control Conference (ACC) 2003, Denver, Colorado.
8. **Professional Education Management Based on Technologic Process.** With Gusarova N. F. Innovations in Professional and Professional Pedagogic Education: 7th Russian Scientific Practical Report Thesis. - Ekaterinburg, USPPU, 1999, pp 115-116.
9. **Choice of the Motivation System of Professional Education Based on Technological Process.** With Gusarova N. F. Education Technologies. Interuniversity guidance articles collection / Ed. By prof. Laptev V. V. - St. Petersburg, St. Petersburg State University of Fine Mechanics and Optics, 2000, pp 49-56.

OTHER

- Fluent in English and Russian
- Member of American Mathematical Society

REFERENCES

The following persons are available to contact for recommendations:

1. Ed Bueler, Assistant Professor of Mathematics
Department of Mathematical Sciences
University of Alaska Fairbanks
(907) 474-7693
2. Fadil Santosa, Professor of Mathematics
Department of Mathematics
University of Minnesota Twin Cities
(612) 626-0528
3. Fernando Reitich, Professor of Mathematics
Department of Mathematics
University of Minnesota Twin Cities
(612) 626-1324