

JING LI

Curriculum Vitae

(updated on November 8, 2012)

School of Mathematics
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RESEARCH INTERESTS

- **Mathematical Biology** : description, understanding, and prediction of the dynamics of biological systems arising from epidemiology, ecology, immunology.
- **Differential Equations (PDEs, ODEs and FDEs)**: stability of systems of equations, numerical solutions, traveling wave solutions.
- **Applied Dynamical Systems** : applications of differential equations systems including ordinary differential equations, partial differential equations, delay differential equations, game theory, and network sciences.

EXPERIENCE AND EMPLOYMENT

- Visitor at Institute for Advanced Study, USA, Sept. 2012 – present.
- Postdoctoral Fellow at Pennsylvania State University, USA, Aug. 2010 – Jun. 2012.
- Visiting Scholar at the Fields Institute, Canada, July 2010.
- Postdoctoral Researcher at the University of Ottawa, Canada, Jan. 2009 – Jun. 2010.
- Research Assistant at the University of Western Ontario, Canada, Sept. 2004 – Dec. 2008.
- Teaching Assistant at the University of Western Ontario, Canada, Sept. 2004 – Dec. 2008.
- Research Assistant at Huazhong University of Science and Technology, China, Sept. 2003 – Jun. 2004.
- Teaching Assistant at Huazhong University of Science and Technology, China, Sept. 2000 – Jun. 2002.

EDUCATION

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| Sept. 2004 – Dec. 2008 | Ph.D. in Applied Mathematics,
University of Western Ontario, London, Canada.
Thesis: <i>Modeling the Dynamics of Infectious Diseases with Latency in Spatially Heterogeneous Environments.</i>
Supervisor: Prof. Xingfu Zou |
| Sept. 2000 – Jun. 2003 | Master of Science, Applied Mathematics,
Huazhong University of Science and Technology, Wuhan, China.
Thesis: <i>The Positive Periodic Solutions and Numerical Solutions of Logistic Equations with Nonlocal Boundary Conditions.</i>
Supervisor: Prof. Li Zhou |

Sept. 1996 – Jun. 2000

Bachelor of Science, Mathematics,
Huazhong Normal University (formerly, Central China Normal University),
Wuhan, China.

Specialisation: *Mathematical Education.*

PUBLICATIONS AND PREPRINTS

• **Articles Published or Accepted in Refereed Journals**

1. Timothy C. Reluga, **Jing Li**. Games of age-dependent prevention for chronic infections by social distancing. *accepted by Journal of Mathematical Biology*. doi:10.1007/s00285-012-0543-8.
2. **Jing Li**, Daniel Blakeley & Robert Smith? (2011). The failure of R_0 , *Computational and Mathematical Methods in Medicine*. Volume 2011, Article ID 527610, 17 pages doi:10.1155/2011/527610.
3. **Jing Li** and Xingfu Zou (2010). Dynamics of an epidemic model with non-local infections for disease with latency over a patchy environment, *Journal of Mathematical Biology*, 60(2010), 645-686, doi: 10.1007/s00285-009-0280-9.
4. Robert J. Smith?, **Jing Li**, Richard Gordon & Jane M. Heffernan (2009). Can we spend our way out of the AIDS epidemic? A World Halting AIDS Model. *BMC Public Health*, 9(Suppl 1): S15.
5. **Jing Li** and Xingfu Zou (2009). Modeling spatial spread of infectious diseases with a fixed latent period in a spatially continuous domain. *Bulletin of Mathematical Biology*, 71(2009), 2048-2079, doi:10.1186/1471-2458-9-S1-S15.
6. **Jing Li** and Xingfu Zou (2009). Generalization of the Kermack-McKendrick SIR model to a patchy environment for a disease with latency, *Mathematical Modelling of Natural Phenomena*, 4(2009), No. 2, 92-118.
7. **Jing Li** and Li Zhou (2003). Existence and uniqueness of positive periodic solutions of the Logistic equations with non-local boundary conditions, *Mathematica Applicata* 16(s) (2003), 155-160.

• **Articles Submitted, Preprints, Manuscripts in Preparation**

8. **Jing Li**, Darla V Lindberg, Rachel A Smith, Timothy C Reluga. The systems theory of community health and infectious disease. *submitted to Proceedings of the National Academy of Sciences*.
9. **Jing Li**, Timothy C. Reluga. A mixed-strategies game theoretical approach of health commons for an infectious disease. *in preparation*.
10. Jonathan Forde, Timothy C. Reluga, **Jing Li**. Non-interference hypothesis for broadly neutralizing antibody. *in preparation*.
11. **Jing Li**, Ronald E. Mickens, Timothy C. Reluga, Density dependence in age-structured models, *in preparation*.
12. Stephen A. Gourley, **Jing Li** and Xingfu Zou, A mathematical model for biocontrol of the invasive weed *Fallopia japonica*, *in preparation*.

• **Non-Refereed Contributions**

13. **Jing Li**, Modeling the Dynamics of Infectious Diseases with Latency in Spatially Heterogeneous Environments, *Ph.D. Thesis, University of Western Ontario, London, Ontario, Canada, 2008*.
14. **Jing Li**, The Positive Periodic Solutions and Numerical Solutions of Logistic Equations with Nonlocal Boundary Conditions, *Master Thesis (Chinese), Huazhong University of Science and Technology, Wuhan, Hubei, P. R. China, 2003*.

SCHOLARSHIPS AND ACADEMIC AWARDS

- *Research Assistantship* in the Department of Applied Mathematics, University of Western Ontario, Canada, Sept. 2004 – Dec. 2008.
- *Teaching Assistantship* in the Department of Applied Mathematics, University of Western Ontario, Canada, Sept. 2004 – Dec. 2008.
- *Western Graduate Research Scholarships* in the Department of Applied Mathematics, University of Western Ontario, Canada, Sept. 2006 – Aug. 2008.
- *SUS (Special University of Scholarship)* in the Department of Applied Mathematics, University of Western Ontario, Canada, Sept. 2004 – Aug. 2005.
- *IGSS (International Graduate Student Scholarship)* in the Department of Applied Mathematics, University of Western Ontario, Canada, Sept. 2004 – Aug. 2005.
- *Excellent Graduate Student* for outstanding performance in graduate school, Huazhong University of Science and Technology, 2002.
- *Excellent Intern* for outstanding performance in internship program in the mathematics department, Huazhong Normal University (formerly, Central China Normal University), China, 2000.
- *Excellent Student Scholarship* (received three times in three consecutive years) for outstanding performance in undergraduate program at the mathematics department, Huazhong Normal University (formerly, Central China Normal University), China, 1997, 1998, 1999.

TEACHING EXPERIENCE

- **University of Ottawa, Canada**, Jan. 2009 – Apr. 2009; Sept. 2009 – Dec. 2009; Jan. 2010 – Apr. 2010
 - **Instructor experience**
 - * Calculus Life Sciences II – Math 1332C, Winter 2010. (173 students)
 - * Calculus Life Sciences I – Math 1330E, Fall 2009. (116 students)
 - * Calculus Life Sciences II – Math 1332D, Winter 2009. (56 students)
- **University of Western Ontario, Canada**, Sept. 2004 – Dec. 2008.
 - **Teaching Assistant experience**
 - * Differential Equations/Applied Mathematical Methods for Electrical and Software Engineering I – DE 2402/AM 2415, Fall Term 2008.
 - * Advanced Calculus II – Calculus 251b, Winter Term 2008.
 - * Intermediate Calculus I – Calculus 050a, Fall Term 2007.
 - * Advanced Calculus II – Calculus 281b, Winter Term 2007.
 - * Intermediate Calculus I – Calculus 050a, Fall Term 2006.
 - * Calculus for Biology and Medicine – Calculus 091b, Winter Term 2006.

- * Applied Mathematical Methods for Electrical and Software Engineering I – AM 276a, Fall Term 2005.
- * Intermediate Calculus II – Calculus 081b, Winter Term 2005.
- * Advanced Calculus I – Calculus 280a, Fall Term 2004.
- **Teaching workshops**
 - * Communication in the Canadian Classroom Advanced Workshop, Winter Term 2007.
 - * Communication in the Canadian Classroom Workshop, Fall Term 2006.
 - * ITATP (International Teaching Assistant Training Program) Workshop, Sept. 2004.
 - * TATP (Teaching Assistant Training Program) Workshop, Sept. 2004.
- **Computer skills used in teaching**

Frequent user of web course tool WEBCT/Blackboard System. Extensive lecturing experience with POWERPOINT, WORD, FRONTPAGE, LATEX.
- **Huazhong University of Science and Technology, China, 2000-2002.**
 - **Teaching Assistant experience**
 - * Partial Differential Equations – Spring Term 2002.
 - * Linear Algebra – Fall Term 2001.
 - * Complex Analysis – Spring Term 2001.
 - * Advanced Mathematics – Fall Term 2000.

INVITED TALKS IN WORKSHOPS, CONFERENCES, AND SEMINARS

- *A mixed-strategy game theoretical approach for infectious disease prevention by social distancing.* AMS Eastern Section Meeting - George Washington University, Washington, District of Columbia. March 17–18, 2012.
- *Modeling spatial spread of infectious diseases with a fixed latent period in a spatially continuous domain.* 2012 Joint Mathematical Meetings, Boston, MA, USA, Jan 4-7, 2012.
- *Intervene or Not? The Theory of Health Commons Management for Infectious Diseases.* Fall Southeastern Section Meeting, Wake Forest University, Winston-Salem, NC, USA, September 24-25, 2011.
- *A game theory approach to infectious disease management policy through individual and government investments,* 2011 Workshop for Young Researchers in Mathematical Biology (WYRMB), Mathematical Biosciences Institute, Columbus, OH, USA, August 29 - September 1, 2011.
- *Intervene or Not? A game theory approach examining infectious disease policy response as a function of government involvement and individual investment,* the SIAM student chapter seminar, Department of Mathematics, Penn State University. March 31, 2011.
- *Generalization of the Kermack-McKendrick SIR model to a patchy environment for a disease with latency,* the Methodology center, Penn State University. Dec. 9, 2010.
- *Can we spend our way out of the AIDS epidemic? A world halting AIDS model,* CMS Summer 2010 Meeting, Fredericton, New Brunswick, Canada, June 4-6, 2010.

- *Modeling spatial spread of infectious diseases with a fixed latent period in a spatially continuous domain*, Society of Mathematical Biology Annual Meeting, Vancouver, BC, Canada, July 27-30, 2009.
- *Dynamics of an epidemic model with non-local infections for diseases with latency over a patchy environment*, CAIMS 2009 Annual meeting, London, Ontario, Canada, June 10-14, 2009.
- *Generalization of the Kermack-McKendrick SIR model to a patchy environment for a disease with latency*, Mathematical Immunology of Infectious Diseases, Banff, Alberta, Canada, May 17-22, 2009.
- *Dynamics of an epidemic model with non-local infections for diseases with latency over a patchy environment*, CMS Winter 2008 Meeting, Ottawa, Ontario, Canada, December 6-8, 2008.
- *An epidemic model with population dispersal and a fixed latent period*, CMS Winter 2006 Meeting, Toronto, Ontario, Canada, December 9-11, 2006.
- *The Traveling Wave Solutions of Nonlinear Reaction-Advection Equations*, International Conference on Recent Developments in Differential Equations and Applications, Guangzhou University, Guangzhou, Guangdong Province, P. R. China, July 17-21, 2006.

POSTERS IN CONFERENCES AND MEETINGS

- *Generalization of the Kermack-McKendrick SIR Model to a Patchy Environment for a Disease with Latency*, Second Canada-France Congress, Montreal, Quebec, Canada, June 1-5, 2008.

CONFERENCES, WORKSHOPS, SUMMER SCHOOLS AND SEMINARS ATTENDED

- CTW: Spatio-Temporal Dynamics in Disease Ecology and Epidemiology, Mathematical Biosciences Institute, Columbus, OH, USA, October 10-14, 2011.
- 2011 Joint Mathematics Meetings, New Orleans, Jan 6-9, 2011.
- Summer 2010 Thematic Program on the Mathematics of Drug Resistance in Infectious Disease at the Fields Institute, Toronto, Ontario, Canada, July - August 2010.
- The 2nd Annual Atlantic Mathematical Biology Workshop at the University of New Brunswick, Fredericton, New Brunswick, Canada, June 7-8, 2010.
- CMS Summer 2010 Meeting at the University of New Brunswick, Fredericton, New Brunswick, Canada, June 4-6, 2010.
- Modeling, Understanding, and Managing River Ecosystems, Two-Day Workshop at the University of Ottawa, Ottawa, Ontario, Canada, May 3-4, 2010.
- The Society of Mathematical Biology Annual Meeting, Vancouver, British Columbia, Canada, July 27-30, 2009.
- CAIMS 2009 Annual meeting, London, Ontario, Canada, June 10-14 2009.
- Workshop on Mathematical Immunology of Infectious Diseases, Banff, Alberta, Canada, May 17-22, 2009.
- Winter School on Mathematical Modeling of Infectious Diseases, Ottawa, Ontario, Canada, February 14-20, 2009.

- Weekly BioMath Seminar, University of Western Ontario, London, Canada, Setp. 2004 - Dec. 2008.
- Applied Dynamics and Applications Seminar, University of Western Ontario, London, Canada, Jan 2008 - Dec. 2008.
- CMS Winter 2008 Meeting, Ottawa, Ontario, Canada, December 6-8, 2008.
- International Conference on Infinite Dimensional Dynamical Systems, York University, Toronto, Canada, Sept. 24-28, 2008
- Canada-China Advanced Study in Biodiversity and Disease Spread Workshop, York University, Toronto, Canada, Aug. 2008.
- 2008 Annual Meeting of The Society of Mathematical Biology, University of Toronto, Ontario, Canada, July 30 - August 2, 2008.
- Canada-France Congress, Montreal, Quebec, Canada, June 1-5, 2008.
- CMS Winter 2006 Meeting, Toronto, Ontario, Canada, December 9-11, 2006.
- International Conference on Recent Developments in Differential Equations and Applications, Guangzhou University, Guangzhou, Guangdong Province, P. R. China, July 17-21, 2006.
- Minicourse on functional differential equtions, Guangzhou University, Guangzhou, Guangdong, P. R. China, July 2006.
- CAIMS-MITACS 2006 Joint Annual Conference, York University, Toronto, June 16-20, 2006.
- 2006 Summer School on Mathematical Modeling of Infectious Diseases, York University, Toronto, Canada, June 10-20, 2006.
- Young mathematician conference in PDE and dynamical systems III, Fields Institute, April 28-29, 2006.
- International Workshop on Differential Equations and Dynamical Systems, Guelph, Ontario, Canada, July 2005.
- Workshop on Modeling the Rapid Evolution of Infectious Disease: Epidemiology and Treatment Strategies, London, Ontario, Canada, May 2005.
- Symposium on Mathematical and Statistical Methods in the Life Sciences, Guelph, Ontario, Canada, November 12, 2004
- Symposium on Influenza Modeling, Fields Institute, Toronto, Canada, Sept. 8, 2004.

PROFESSIONAL SERVICE AND MEMBERSHIPS

- Society for Mathematical Biology, member since July 2008.
- American Mathematical Society, member since Jan 2011.
- Mathematical Association of America, member since Nov 2011.
- Society for Industrial and Applied Mathematics, member since Oct 2011.
- Judge of the Ottawa Reginal Science Fair on April 4, 2009.
- Group leader for “Flower Hour” of BioMath group meeting at the applied mathematics department, University of Western Ontario, Sept. 2006 – Aug. 2007.
- Volunteer in the Graduate and Professional School Fair at University of Western Ontario, Nov. 1-2, 2006.

REFERENCES

- Prof. Timothy C Reluga (Postdoctoral advisor)
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University Park, PA 16802-6404
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- Prof. Robert Smith? (Postdoctoral advisor)
Department of Mathematics and Statistics, The University of Ottawa
585 King Edward Ave, Ottawa, ON, Canada K1N 6N5
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fax: (613) 562-5776
email: rsmith43@uOttawa.ca
web: <http://www.mathstat.uottawa.ca/~rsmith/>
- Prof. Xingfu Zou (Ph.D. Supervisor)
Department of Applied Mathematics, The University of Western Ontario
Middlesex College, Room 284, London, ON, Canada N6A 5B7
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web: <http://www.apmaths.uwo.ca/~xzou/>
- Prof. Monica Nevins (teaching reference)
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