

ADNAN SLJOKA

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Nationality: Canadian

Education:

- **Ph.D. candidate in Applied Mathematics (2007-in progress)**

York University: (Toronto, Canada)
Supervisor: Walter Whiteley

- **Master of Science (2006)**

- **Applied and Industrial Mathematics**

York University: (Toronto, Canada)
Thesis: *Counting for Rigidity, Flexibility and Extensions via the Pebble Game Algorithm*
Supervisor: Walter Whiteley

- **Canadian Certificate in Bioinformatics (2005)**

- **Bioinformatics** University of British Columbia (Vancouver, Canada) Feb/05
 - **Genomics** University of Calgary (Calgary, Canada) May/05
 - **Proteomics** Université de Montréal (Montreal, Canada) June/05

- **Bachelor of Education (2004)**

Division: Intermediate/Senior
Teachable: Mathematics and Geography
University of Windsor: (Windsor, Canada)

- **Bachelor of Science With Honours (2002)**

- **Applied Mathematics Specialized Honours**

York University: (Toronto, Canada)

Research Interests:

Rigidity Theory, Matroid Theory, Graph Theory, Algorithms for modeling protein rigidity/flexibility and protein motions, Bioinformatics, Mathematical Modeling, Mathematical Biology (Biomedicine), Mathematical Epidemiology, Numerical Analysis.

Teaching/Work Experiences:

- **Teaching Assistant** (2004 – present)

Department of Mathematics and Statistics, York University: (Toronto, Canada)
Various mathematics courses: Calculus of single and multi variables, Linear Algebra, Discrete Mathematics, Mathematical Education, Financial Mathematics.

- **Research Assistant** (2004 – present)

Department of Mathematics and Statistics, York University: (Toronto, Canada)
Part of NIH (US) and NSERC (Canada) funded grant, Supervisor: Walter Whiteley

Mathematics Tutor / Teacher, Oxford Learning Center (Brampton, Canada) (October 2009 – present)

Vincent Massey Secondary School, Windsor, Ontario (October 2003, April 2004)
Student Teaching Mathematics, Grade 9 and 11(Enriched), 10 (Academic) and 12 (Calculus)

Massey Elementary School, Windsor, Ontario (February 2004)
Student Teaching six different Grade 8 Mathematics and Geography classes

Sandwich Secondary School, Lasalle, Ontario (November 2003)
Student Teaching Grade 9 Geography and Grades 10 and 11 Mathematics

Mathematics Tutor / Teacher, Oxford Learning Center (Brampton, Canada) (October 2001 – June 2002)

Awards/Scholarships and Achievements

- Support from National Institute of Health (US) and University of Illinois at Urbana-Champaign to attend a Hands on Workshop on Computational Biophysics, Beckman Institute, University of Illinois, Urbana-Champaign, Illinois, November 1-5, 2010
- Support from London Mathematical Society (UK) to attend London Mathematical Society Workshop: Rigidity of Frameworks and Applications, Lancaster University, Lancaster, UK, July 12-15, 2010
- Support from National Science Foundation (US) and MITACS (Canada) to attend DIMACS/MBI US-African Advanced Study Institute and workshop on Mathematical Economic Epidemiology in Kampala, Uganda, July 17 - August 5, 2009
- Performed simulation of the motion of the key mutant and nonmutant protein of Cystic Fibrosis which appeared on Television of Ontario (TVO) series and Knowledge Network, *Donald Coxeter: The Man Who Saved Geometry*. From Foundry Films and award-winning director David New, <http://www.imdb.com/title/tt1541130/combined>
- Support from University of Georgia (US) to attend Summer School on Multivariate Splines and Applications, Athens, GA, May 11-22, 2009
- Poster prize, second place. Third Canadian Conference on Biomedical Computing, Toronto (May 2008)
- Thesis Prize Award, Faculty of Graduate Studies, York University (2006)
- Burroughs Wellcome Fund, International Competition, (To attend Genomics Workshop organized by Canadian Genetics Disease Network at University of Calgary) (May 2005)
- Canadian Institute of Health Research (CIHR) Institute of Genetics Short Term Research Visit Competition (2005) to attend the Bioinformatics, Genomics and Proteomics Workshops at University of British Columbia, University of Calgary, Université de Montréal

- MITACS Mobility Fund Award (To attend MITACS-METHEON workshop "Complex Networks in the Life Sciences" and "Minisymposium on Mathematics in the Life Sciences" in Berlin, Germany, March 29-April 04, 2007).
- Received partial funding from National Science Foundation (US) to attend the workshop "Discrete and Computational Geometry: Twenty Years Later", Snowbird, Utah, (June 18-22, 2006).
- Support from Pacific Institute of Mathematical Sciences (PIMS) to attend "The eighth PIMS graduate industrial math modelling camp", University of Lethbridge, Lethbridge, Canada (May 7 – 11, 2005).
- Support from Pacific Institute of Mathematical Sciences (PIMS) to attend "The ninth PIMS industrial problem solving workshop", University of Calgary, Calgary, Canada (May 15 – 19, 2005).
- Skills Development Fund, York University (2005 – 2008)
- Research Assistantship Scholarship, York University (2004 – present)
- Teaching Assistantship Scholarship, York University (2004 – present)
- Most Valuable Student Award, Faculty of Education, University of Windsor (2004)
- Member of Dean's and Chair's Honour Roll, York University (2000-2002)
- Faculty of Science Achievement Award, York University (2002)

Publications/Preprints

- Sljoka A., Shai O. and Whiteley W., *Checking Mobility and Decomposition of Linkages via Pebble Game Algorithm*, submitted to Proceedings of the ASME 2011 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, IDETC/CIE 2011, August 29-31, 2011, Washington, DC, USA.
- Shai O., Sljoka A. and Whiteley W., *Directed Graphs, Decompositions, and Spatial Rigidity*, submitted to Discrete Applied Mathematics, 2010.
- Sljoka A., Whiteley W. and Shai O., *Efficient Algorithms for Assur Decompositions in 3-D*, in preparation.
- Sljoka A. and Wilson W., *Probing Protein Ensemble Rigidity and Flexibility and predictions of Hydrogen-Deuterium exchange using rigidity theory and solvent accessibility*, in preparation.
- Sljoka A., Bezginov A. and Whiteley W., *Hinge prediction algorithm using the Extensions of the Pebble Game Algorithm*, in preparation.
- Shai O., Sljoka A. and Whiteley W., *Inductive Constructions for 3-D Assur Graphs*, in preparation.

- Sljoka A., Counting for Rigidity, *Flexibility and Extensions via the Pebble Game Algorithm – Hinge Predictions and other Biological Applications*, Third Canadian Student Conference on Biomedical Computing, Report 2008.

- Sljoka A., *Counting for Rigidity, Flexibility and Extensions via the Pebble Game Algorithm*, Master's Thesis, York University, Toronto, 2006.

Talks Presented

- Predicting Rigidity and Flexibility of proteins using rigidity theory (Poster), Recomb 2011, 15th Annual International Conference on Research in Computational Molecular Biology, Vancouver, BC, (March 28, 29, 2011).

- Decomposition of Mechanisms: Assur Graphs and Algorithms, Geometry day at York, York University, Toronto, Canada, (January, 26, 2011).

- Counting for Rigidity and Flexibility - Algorithms and Applications, Disertation Subject Oral Examination, York University, Toronto, Canada, (June 30, 2010)

- Predicting flexibility and motions of proteins using rigidity theory (Poster), MITACS / CORS 2010 Annual Conference, Edmonton, Canada, (May 25, 2010)

- Counting for rigidity and flexibility - hinge predictions and allostery (Poster), MITACS Annual Conference, University of New Brunswick, NB, Canada (May 31, 2009)

- Pebble Game Algorithm, Hinge predictions and allostery (Poster), Molecular Simulations: Algorithms, Analysis, and Applications, Institute of Mathematics and its Applications (IMA), University of Minnesota, Minneapolis, MN, USA (May 18, 2009)

- Pebble Game Extensions: Relevant Regions, Hinge Motions and Allostery. Recent Progress in Rigidity Theory, Banff International Research Station (BIRS), Banff, Canada (July 11, 2008)

- Third Canadian Student Conference on Biomedical Computing, Institute of Biomaterials and Biomedical Engineering (Poster), Toronto (March 13, 2008)

- Algorithms in Rigidity Theory: The Pebble Game Algorithm, York University (January 2007)

- Master's Thesis Defense, Counting for Rigidity, Flexibility and Extensions via the Pebble Game Algorithm, York University (2006)

Workshops/Conferences Attended

- Recomb 2011, 15th Annual International Conference on Research in Computational Molecular Biology, Vancouver, BC, (March 28 - 31, 2011)

- Hands on Workshop on Computational Biophysics, Beckman Institute, University of Illinois, Urbana-Champaign, Illinois, November 1-5, 2010

- Rigidity of Frameworks and Applications, Lancaster University, Lancaster, UK, July 12-15, 2010

- MITACS / CORS 2010 Annual Conference, Edmonton, Canada, (May 25, 2010)
- MITACS Annual Conference, University of New Brunswick, Fredericton, NB (May 31 - June 5, 2009)
- Molecular Simulations: Algorithms, Analysis, and Applications, Institute of Mathematics and its Applications (IMA), University of Minnesota, Minneapolis, MN, USA (May 18 - 22, 2009)
- Rigidity, Flexibility, and Motion: Theory, Computation and Applications to Biomolecules, Banff International Research Station (BIRS), Banff, Canada (July 6 – 11, 2008)
- Recent Progress in Rigidity Theory, Banff International Research Station (BIRS), Banff, Canada (July 11 – 13, 2008)
- Third Canadian Student Conference on Biomedical Computing, Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto (March 13 – 15, 2008)
- Rigidity, Flexibility and Motion in Biomolecules, Tempe, Arizona (May 14 – 18, 2006)
- Proteomics, Canadian Bioinformatics Workshops, Université de Montréal, Montreal (June 2005)
- Genomics, Canadian Bioinformatics Workshops, University of Calgary, Calgary (May 2005)
- Bioinformatics, Canadian Bioinformatics Workshops, Vancouver (February 2005)
- Discrete and Computational Geometry Workshop at Mathematical and Scientific Research Institute (MSRI), Berkeley, California (August 20 – 29, 2003)

Computational Skills:

- Experience in Windows, Unix, and Linux environments.
- Scientific programming experience in FORTRAN, C, Turing, LaTeX, Maple, Matlab, Geometer's Sketchpad, Pymol.
- Experience with various bioinformatics software and databases.

Professional Society Memberships:

- Canadian Applied and Mathematical Society (CAIMS), American Mathematical Society (AMS), Mathematical Association of America (MAA), Canadian Institute of Health Research (CIHR), Ontario College of Teachers (OCT), Coaching Association of Ontario

Extra Curricular:

- Varsity Tennis, York University 1997-2001
- Coached tennis for more than 10 years and promoted and developed youth tennis in Cuba
- Certified *Tennis Canada Coach*, July 1999
- Tennis, hiking, biking, skiing, running, reading, science, improv, comedy, meditation, humanitarianism, travel, bamboo flutes

References and Letters of Recommendation: Furnished upon request