

# Azar Shakoori

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Affiliation:

Faculty of Science, Department of Applied and  
Industrial Mathematics

University of Ontario Institute of Technology

Oshawa, ON, L1H 7KA, Canada

CITIZENSHIP   ◇   **Canadian**

EDUCATION     ◇   **Western University, Canada (The University of Western Ontario)**, London, Ontario, Canada.

PhD in Applied Mathematics, December 2007.

Thesis title: *Bivariate Polynomial Solver by Values*

Supervisors: Dr. Robert M. Corless and Dr. Dhavide Aruliah.

◇   **Western University, Canada (The University of Western Ontario)**, London, Ontario, Canada.

M.Sc. in Applied Mathematics, January 2003.

Thesis title: *Solving Bivariate Polynomials by Eigenvalues*

Supervisor: Dr. Robert M. Corless.

◇   **University of Tabriz**, Tabriz, Eastern Azerbaijan, Iran.

B.Sc. in Pure Mathematics, July 1995.

WORK  
EXPERIENCE   ◇   **Math Lecturer**, University of Ontario Institute of Technology, Faculty of Science, Department of Mathematics, Oshawa, ON, Canada (September 2011-May 2013). Teachings: Single and Multivariable Calculus, Vector Calculus, Differential Equations, Complex Analysis, Discrete Mathematics, Linear Algebra, Numerical Methods, and Computational Science.

◇   **Math Lecturer**, Sheridan Institute of Technology and Advanced Learning, School of Applied Computing, Oakville, ON, Canada (May 2012-August 2013). Teachings: Mathematics for Information System Security, Discrete Mathematics. Other duties: Curriculum design of a mathematics course for a bridging program to bachelor degree.

◇   **Post-doctoral fellow**, Universidad de Cantabria, Facultad de Ciencias, Departamento de Matematicas, Estadistica y Computacion, Santander, Spain, working with Prof. Laureano Gonzalez-Vega (July 2010-April 2011)

◇   **Invited researcher**, Universidad de Cantabria, Facultad de Ciencias, Departamento de Matematicas, Estadistica y Computacion, Santander, Spain, working with Prof. Laureano Gonzalez-Vega (September 2009-June 2010)

◇   **Visiting research fellow**, University of Auckland, Auckland, New Zealand, working with Prof. John C. Butcher (August 2009)

◇   **Post-doctoral fellow**, The University of Western Ontario, Department of Applied Mathematics, London, ON, Canada, working for Prof. Robert M. Corless (July 2008-November 2008)

◇   **Research assistant**, The University of Western Ontario and Ontario Research Centre for Computer Algebra (ORCCA), London, ON, Canada (January 2001-2007)

◇   **Teaching assistant**, The University of Western Ontario, London, ON, Canada (January 2001-April 2006)  
As my Teaching-Assistant duty at the University of Western Ontario, I have run a tutorial sessions for a class of about 150 students taking first and second year Linear Algebra, Calculus, and Differential Equations courses.

- ◇ **Part-time lecturer**, Azad University of Karaj, Karaj, Tehran, Iran, (2000)  
Course Taught: Calculus
  
- HONORS AND AWARDS
  - ◇ **SAGA Post-doctoral funding**  
(SAGA is a training network part of Marie Curie Actions <http://www.saga-network.eu>) Universidad de Cantabria, Facultad de Ciencias, Departamento de Matematicas, Estadistica y Computacion, July 2010–April 2011.
  - ◇ **Ontario Graduate Scholarship (OGS)**  
The University of Western Ontario, May 2006–April 2007.
  - ◇ **Western Graduate Research Scholarship (WGRS)**  
The University of Western Ontario, May 2005–December 2006.
  - ◇ **Ontario Graduate Scholarships in Science and Technology (OGSST)**  
The University of Western Ontario, May 2004–December 2004.
  - ◇ **Best Teaching Assistant Award**  
Faculty of Science  
The University of Western Ontario, May 2004–December 2004.
  - ◇ **International Graduate Student Scholarship (IGSS)**  
The University of Western Ontario, January 2003–April 2004.
  - ◇ **Special University Scholarship (SUS)**  
The University of Western Ontario, May 2001–April 2004
  
- CONTRIBUTION TO RESEARCH AND PUBLICATIONS
  - “**Computing the topology of a real algebraic plane curve whose defining equations are available only by values**”  
Robert M. Corless, Gema M. Diaz-Toca, Mario Fioravanti, Laureano Gonzalez-Vega, Ignacio F. Rua, and **Azar Shakoori**  
*Computer Aided Geometric Design*, Volume 30, Issue 7, October 2013, Pages 675-706
  - “**Using implicit equations of parametric curves and surfaces without computing them: Polynomial algebra by values**”  
Gema M. Diaz-Toca, Mario Fioravanti, Laureano Gonzalez-Vega, and **Azar Shakoori**  
*Computer Aided Geometric Design*, Volume 30, Issue 1, January 2013, Pages 116-139
  - “**Polynomial Algebra for Birkhoff Interpolants**”  
John C. Butcher, Robert M. Corless, Laureano Gonzalez-Vega, **Azar Shakoori**  
*Numerical Algorithms*, Vol. 56, No. 3 ( March 2011), pp. 319-347
  - “**Computing the Topology of a Real Algebraic Plane Curve whose Defining Equations are Only Available by Values**”  
Robert M. Corless, Mario Fioravanti, Laureano Gonzalez-Vega, Gema Diaz-Toca , Iñaki Rúa and **Azar Shakoori**  
*Submitted May 2011*
  - “**Polynomial Algebra and its Applications**”  
Robert M. Corless, Mario Fioravanti, Laureano Gonzalez-Vega, Gema Diaz-Toca , Iñaki Rúa and **Azar Shakoori**  
*Refereed conference paper at Proceedings of Encuentro de Algebra Computacional y Aplicaciones (EACA'2010)*, Santiago de Compostelo, Spain, July 2010.
  - “**Barycentric Birkhoff Interpolation**”  
Dhavid A Aruliah, John. C. Butcher, Laureano Gonzalez-Vega, Robert M. Corless, and **Azar Shakoori**  
*Accepted Extended Abstract to Milestones in Computer Algebra Conference, MICA 2008.*
  - “**Barycentric Hermite Interpolants for Event Location in Initial-Value problems**”  
Robert M. Corless, **Azar Shakoori**, Dhavid A Aruliah, and Laureano Gonzalez-Vega  
*Journal of Numerical Analysis, Industrial and Applied Mathematics*, Vol. 3, no. 1-2 (2008), pp. 1-16.
  - “**Geometric Applications of the Bézout Matrix in the Bivariate Tensor-Product Lagrange basis**”  
Dhavid A Aruliah, Robert M. Corless, Laureano Gonzalez-Vega, and **Azar Shakoori**  
*Proceedings of the 2007 international workshop on Symbolic-Numeric Computation (SNC'2007)*, pp. 55–64.

**“Bézout Matrix in Hermite and Birkhoff Bases”**

Robert M. Corless, Laureano Gonzalez-Vega, and **Azar Shakoori**

Poster presented at *Maple Conference*, Wilfrid Laurier University, Waterloo, Canada, July 2006.

**“Modeling Nonlinear Pulse Propagation in Optical Transmission Lines”**

University of Victoria, GIMMC, Victoria, May 2004, Mentor: Tobias Shafer, PhD work.

**“The Effects of Impact on Design Features”** Husky Injection Molding Systems,

University of British Columbia, PIMS, Vancouver, May 2004, Group of mentors, PhD work.

**“Polynomial Algebra by Values”**

Amirhossein Amiraslani, Robert M. Corless, Laureano Gonzalez-Vega, and **Azar Shakoori**

Refereed poster presented at *International Symposium on Symbolic and Algebraic Computation (ISSAC)*, University of Cantabria, Santander, Spain, July 2004.

**“Bézout Matrix in Lagrange Basis”**

Azar Shakoori

Refereed conference paper at *Proceedings of Encuentro de Algebra Computacional y Aplicaciones (EACA'2004)*, University of Cantabria, Santander, Spain, July 2004.

**“Polynomial Algebra by Values”**

Amiraslani, Corless, Gonzalez-Vega, **Azar Shakoori**

Technical report at *Ontario Research Centre for Computer Algebra (ORCCA)*, The University of Western Ontario, London, January 2004, 23 pages.

**“Topology Determination of Implicitly Defined Real Algebraic Plane Curves”**

Robert M. Corless, Laureano Gonzalez-Vega, Ioana Necula, **Azar Shakoori**.

Refereed conference paper at *Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*, Timisoara, Romania, October 2003.

**“Solving Bivariate Polynomials by Eigenvalues”**

Azar Shakoori

Talk presented at the annual meeting of *Society for Industrial and Applied Mathematics (SIAM)*, Montreal, Canada, June 2003.

**“Exploration of Bézout Matrices in Maple for Solving Bivariate Polynomials”**

Azar Shakoori

Talk presented at *Southern Ontario Numerical Analysis Day (SONAD)*, Field Institute, Toronto, April 2002.

**“Exploration of Bézout Matrices in Maple for Solving Bivariate Polynomials”**

Robert M. Corless and **Azar Shakoori**

Poster presented at *East Coast Computer Algebra Day (ECCAD)*, LaGuardia Community College, New York, NY, May 2002.

**“Exploration of Bézout Matrix in Maple”**

Azar Shakoori

Talk presented at *Syracuse University Graduate Mathematics Conference*, Syracuse University, Syracuse, NY, April 2002

RESEARCH INTERESTS

Computer Algebra (Scientific Computation); developing and implementing mathematical algorithms.  
Computational and Numerical Linear Algebra  
Numerical techniques  
Mathematical Modeling

RESEARCH PROJECTS

- ◇ Polynomial root-finding and intersection problems for plane curves, specified by their values: ,
  - **The curve intersection problem in Computer Aided Geometric Design (CAGD).**
  - **The offset intersection problem arising in the determination of tool-centre paths for Numerically-Controlled Machining (NC).**

- ◇ Implementation of a symbolic-numeric polynomial root-finding algorithm in Maple Computer Algebra System.

COURSES TAUGHT Single and Multivariable Calculus, Vector Calculus, Differential Equations, Complex Analysis, Discrete Mathematics, Linear Algebra, and Numerical Analysis

SKILLS Programming in MAPLE and MATLAB.  
Office productivity tools such as MS-Word, Excel, etc.  
Text processing using  $\text{\LaTeX}$  and related packages.  
Computer operating systems: Windows, Linux, OS X.

- REFERENCE
- ◇ **Prof. Pietro-Luciano Buono**  
Faculty of Science  
The University of Ontario Institute of Technology  
Oshawa, ON, L1H 7KA, Canada  
Email: [luciano.buono@uoit.ca](mailto:luciano.buono@uoit.ca)  
Homepage: [http://faculty.uoit.ca/buono/P-L.\\_Buono\\_Personal\\_Webpage/Welcome.html](http://faculty.uoit.ca/buono/P-L._Buono_Personal_Webpage/Welcome.html)
  - ◇ **Prof. Robert M. Corless**  
Dept. of Applied Mathematics.  
Faculty of Science  
Western University, Canada (The University of Western Ontario)  
London, ON, N6A 5B7, Canada  
Email: [rcorless@uwo.ca](mailto:rcorless@uwo.ca)  
Homepage: <http://www.apmaths.uwo.ca/people/rcorless.shtml>
  - ◇ **Prof. Dhavide Aruliah**  
Faculty of Science  
University of Ontario Institute of Technology  
North Oshawa, ON, L1H 7K4, Canada  
Email: [Dhavide.Aruliah@uoit.ca](mailto:Dhavide.Aruliah@uoit.ca)  
Homepage: [http://science.uoit.ca/Faculty\\_Staff/D\\_Aruliah.htm](http://science.uoit.ca/Faculty_Staff/D_Aruliah.htm)
  - ◇ **Prof. John C. Butcher**  
Honorary Research Professor  
Dept. of Mathematics  
The University of Auckland  
Auckland, New Zealand  
Email: [butcher@math.auckland.ac.nz](mailto:butcher@math.auckland.ac.nz)  
Homepage: <http://www.math.auckland.ac.nz/butcher/>  
Wikipedia: [http://en.wikipedia.org/wiki/John\\_C.\\_Butcher](http://en.wikipedia.org/wiki/John_C._Butcher)
  - ◇ **Prof. Amirhossein Amiraslani**  
University of Hawaii Maui College  
Email: [aamirasl@hawaii.edu](mailto:aamirasl@hawaii.edu)