Somayeh Mashayekhi

Assistant professor
Department of Mathematics
Kennesaw State University
1100 South Marietta Pkwy Marietta, GA 30060
470-578-4992
smashayekhi@fsu.edu   smashay1@kennesaw.edu
http://myweb.fsu.edu/smashayekhi   http://facultyweb.kennesaw.edu/smashay1

Professional Employment

Assistant professor, August 2019-Present
Department of Mathematics, Kennesaw State University, Kennesaw, GA

Courtesy Assistant professor, August 2019-Present
Department of Scientific Computing, Florida State University, Tallahassee, FL

Post Doctoral Research Associate, November 2016- August 2019
Department of Scientific Computing, Florida State University, Tallahassee, FL
Mentor: Peter Beerli

Post Doctoral Research Associate in Computational Science & Engineering, November 2015- November 2016
Department of Mathematics, Florida State University , Tallahassee, FL
Mentors: M. Yousuff Hussaini, William S. Oates

Education

Ph.D. of Mathematics, August 2013- August 2015
Department of Mathematics and Statistics, Mississippi State University, Mississippi, Ms

Ph.D. of Applied Mathematics, August 2009- July 2013
Department of Mathematics, Alzahra University, Tehran, Iran

M.S. of Applied Mathematics, August 2004- July 2006
Department of Mathematics, Alzahra University, Tehran, Iran

Research Interests

Approximation theory, Bayesian method and uncertainty quantification , Computational methods, Fractional calculus, Fractal media and fractional viscoelasticity, Fractional Poisson process, Optimal control, Orthogonal functions and its applications to dynamic systems, Population genetics and Coalescence theory, Spectral methods.

Book Publications

M. Shafiebeyk Mohammadi, S. Mashayekhi, H. Pourbashash, Differential and Integral (in Farsi), 2011, Noavaran Sharif Publication (416 pages).

Refereed Journal Publications

S. Mashayekhi, W. Oates, M.Y. Hussaini, *A physical interpretation of fractional viscoelasticity based on the fractal structure of media: Theory and experimental validation*, **Journal of the Mechanics and Physics of Solids**, 2019, 128:137-150.

S. Mashayekhi, P. Beerli, *The fractional coalescent*, **Proceedings of the National Academy of Sciences of the United States of America**, 2019, 116: 6244-6249.

S. Mashayekhi, P. Miles, M. Yousuff Hussaini and W. Oates, *Fractional Viscoelasticity in Fractal Media: Theory, Experimental Validation, and Uncertainty Analysis*, **Journal of the Mechanics and Physics of Solids**, 2018, 111:134-156.

V.S. Krishnasamy, S. Mashayekhi, M.Razzaghi, *Solving fractional differential equations numerically using fractional integral operational matrices*, **IEEE/CAA Journal of Automatica Sinica**, 2017, 4:98–106.

S. Mashayekhi, M.Razzaghi, *An approximate method for solving fractional optimal control problems by hybrid function*, **Journal of Vibration and Control**, 2016, 10.1177/1077546316665956.

S. Mashayekhi, M.Razzaghi, *Numerical solution of distributed order fractional differential equations by hybrid functions*, **Journal of Computational Physics**, 2016, 315: 169-181.

S. Mashayekhi, M.Razzaghi, *Numerical solution of the fractional Bagley-Torvik equation*, **Mathematical Methods in the Applied Sciences**, 2016, 39: 353-365.

V. Calvert, S. Mashayekhi, M.Razzaghi, *Solution of Lane-Emden type equations using Rational Bernoulli functions*, **Mathematical Methods in the Applied Sciences**, DOI: 2016, 39: 1268-1284.

S. Mashayekhi, M. Razzaghi, and M. Wattanataweekul, *Analysis of multi-delay and piecewise constant delay systems by hybrid functions approximation*, **Differential Equations and Dynamical Systems**, 2016, 24: 1-20.

S. Mashayekhi, M.Razzaghi, *Numerical solution of nonlinear fractional integro-differential equations by hybrid functions*, **Engineering Analysis with Boundary Elements**, 2015, 56: 81-89.

S. Mashayekhi, Y. Ordokhani, and M. Razzaghi, *Hybrid functions approach for optimal control of systems described by integro-differential equations*, **Applied Mathematical Modelling**, 2013, 37: 3355-3368.

S. Mashayekhi, Y. Ordokhani, and M. Razzaghi, *A hybrid functions approach for the Duffing equation*, **Physica Scripta**, 2013, 88: 025002.

S. Mashayekhi, Y. Ordokhani, and M. Razzaghi *Hybrid functions approach for nonlinear constrained optimal control problems*, **Communications in Nonlinear Science and Numerical Simulation**, 2012, 17: 1831-1843.

Refereed Proceedings

W. Oates, P. Miles, W. Gao, J. Clark, S. Mashayekhi, M.Y. Hussaini, *Rate dependent constitutive behavior of dielectric elastomers and applications in legged robotics*, **Proc. SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health Monitoring** , Portland, Oregan, March 26-29, 2017.

Refereed Journal Submitted

S. Sedaghat, S. Mashayekhi, *An efficient technique based on Bernoulli hybrid for solving neutral delay differential equations.*

Research Funding

Heterogeneity within and among populations, CO-PI with PI: Peter Beerli, National Science Foundation and National Institutes of Health (submitted).

Teaching Experience

Kennesaw State Uinersity, USA
Fall 2019
Course: Calculus I

Instructor: Mississippi State University, USA
August 2014 - May 2015
Course: Business calculus (Multiple sections)
Evaluation: *4 out of 5*

Instructor: Alzahra university, Payame Noor university and Science and Culture university, Iran
September 2003 - May 2013
Courses: Complex variables, Numerical analysis, Ordinary differential equations, Engineering mathematics, Computer programming, Introductory probability, Probability and statistics for scientists and engineers, Advanced calculus, Precalculus algebra, College algebra
Evaluation: *19.94 and 19.73 out of 20*

Presentation

S. Mashayekhi, The fractional coalescent, The Florida State University Department of Biological Science, Tallahassee (USA), April 2019

S. Mashayekhi, A physical interpretation of fractional viscoelasticity based on the fractal structure of media : Theory and experimental validation, SIAM conference on Computational Science and Engineering, Spokane (USA), February 2019

S. Mashayekhi and P. Beerli, A new coalescent theory based on a non-Markovian Poisson process. Evolution 2018, Montpellier (France), August 2018

S. Mashayekhi, Mittag-Leffler Distribution in Population Genetics, MANNA 2017, Santa Fe (USA), December 2017 (Poster)

S. Mashayekhi, Fractional Viscoelasticity in Elastomeric Materials, MANNA 2017, Santa Fe (USA), December 2017 (Poster)

S. Mashayekhi, Numerical solution of fractional partial differential equations via hybrid functions, SIAM conference on Computational Science and Engineering, Atlanta (USA), March 2017

S. Mashayekhi, Bernoulli polynomials as a trial function in spectral methods, SIAM conference on the 13th International Symposium on Orthogonal Polynomials(USA), June 2015

S. Mashayekhi, Solving of fractional order differential equations by using hybrid function, 2015 Joint Mathematics Meetings (USA), January 2015

S. Mashayekhi, A new method for solving nonlinear fractional integro-differential equations, The 10th Mississippi State Conference on Differential Equations and Computational Simulations, Mississippi State University (USA), October 2014

S. Mashayekhi, Hybrid functions approach for solving HIV pathogenesis models, 2014 MBI workshop for young researchers in mathematical biology, Mathematical Biosciences Institute, The Ohio State University (USA), August 2014 (Poster)

S. Mashayekhi, Hybrid function for solving nonlinear constrained optimal control problems, SIAM conference on optimization, San Diego, California (USA), May 2014

Honors and Awards

- Postdoctoral Traveling award for SIAM conference on Computational Science and Engineering, February 2019

- The outstanding graduated student award in Mississippi State University, May 2015

- Teaching assistantship in Mississippi State University, August 2013- August 2015

- Traveling fellowship award for SIAM conference on the 13th International Symposium on Orthogonal Polynomials, Special Functions and Applications, at the National Institute of Standards and Technology, Gaithersburg, Maryland, June 2015

- Traveling fellowship award for 2015 Joint Mathematics Meetings, January 2015

- Traveling fellowship award for Prospects in Applied Mathematics, The University of Chicago, October 2014

- Traveling fellowship award for 2014 MBI workshop for young researchers in mathematical biology, Mathematical Biosciences Institute, The Ohio State University, August 2014

- Traveling fellowship award for SIAM conference on optimization, San Diego, California, May 2014

- First rank for Ph.D admission exam, Alzahra university, Iran , August 2009

Google Scholar (retrieved: July 18, 2019)
https://scholar.google.com/citations?user=Y6ONyTEAAAAJ&hl=en
Total citations: 240, since 2014: 231; h-index:10; i10-index: 10

Service

- *Organizer*

  - Mini symposium on "Application of Fractional Calculus in Material Science and Engineering" at the SIAM conference on Computational Science and Engineering, Washington, USA, Feb. 25-March 01, 2019.