Saroj Aryal
Curriculum Vitae

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EDUCATION

Ph.D. in Mathematics   Aug 2013

University of Wyoming, Laramie, WY.

▷ Advisor: Dr. Farhad Jafari

▷ Dissertation: Sparse Moment Problem

▷ Virinidra & Gail Sehgal and Catherine Gibbs Shaw Outstanding Graduate Student in Research Award

M.S. in Mathematics   Dec 2011

University of Wyoming, Laramie, WY.

▷ Advisor: Dr. Farhad Jafari

▷ Thesis: Moment Problems & Subsequences of Moment Sequences

B.S. in Mathematics (Honors)   May 2009

Trinity College, Hartford, CT.

▷ Advisor: Dr. Nancy J Wyshinski

▷ Honors in Mathematics, Honors in General Scholarship

▷ Phi Beta Kappa National Honor Society & Pi Mu Epsilon Connecticut Chapter

Study Abroad   Spring 2008

Budapest Semesters in Mathematics, Budapest University of Technology and Economics, Budapest, Hungary

EXPERIENCES

Assistant Professor of Mathematics   Jan 2020-present
Georgian Court University, Lakewood, NJ

▷ **Courses Taught**

   ○ Python Programming, Introduction to Mathematical Analysis⚲, Math for Secondary School Teachers, Foundations of Geometry⚲, Probability & Statistics⚲, Discrete Mathematics⚲, Calculus II⚲, Calculus I⚲, Pre-calculus⚲, College Algebra, Introduction to Statistical Thinking⚲
(Note: ⚲ = taught in synchronous virtual format too)

▷ **Curriculum Development**

   ○ Modification of several mathematics courses for fully virtual offering during the pandemic.

   ○ Participation in departmental initiatives to improve program offerings, including drafting of a proposal for B.S. in Mathematics.

▷ **Service Involvements**

   ○ Program Review and Assessment Committee (member)   Fall 2020 - present

   ○ Policy Manual Subcommittee (member)   Fall 2020 - present

   ○ Campus Safety Committee (member)   Fall 2020 - Spring 2022

- ○ Undergraduate Research
  - * *Special Matrices*   AY 2021-2022
    Students: Victoria Vonfrolio
  - * *Fibonacci Sequences*   AY 2020-2021
    Students: Kaitlyn Bragen & Alexa Curcio (presented in Undergraduate Poster Session at MAA-NJ, 2021)
- ○ Advising Math and Math Education majors   Fall 2013 - present
- ○ Member of Search Committee for Mathematics   Spring 2020
- ○ Member of Search Committee for Applied Computing   Spring 2020
- ○ Member of Search Committee for Computer Information Systems   Spring 2023

Assistant - Associate (Tenured) Professor of Mathematics Aug 2013 - Dec 2019
Montana State University Billings, Billings, MT

▷ **Courses Taught**

- ○ Mathematical Analysis, Modern Geometry⌨, Mathematical Computing with Mathematica, Methods of Proofs, Differential Equations, Multivariate Calculus, Calculus II, Calculus I, Finite Mathematics, College Trigonometry⌨, College Algebra⌨, Contemporary Mathematics⌨, Intermediate Statistical Concepts, Intro to Statistics⌨, Intro to Statistical Concepts⌨
  (Note: ⌨ = taught online sections too)

▷ **Curriculum Development**

- ○ Online Course Development of M 122 College Trigonometry, M 329 Modern Geometry, and STAT 217 Intermediate Statistical Concepts
- ○ Designed course syllabus for M 242 Methods of Proof and taught it in Spring 2014 when it was offered for the first time at the University
- ○ Modification and standardization of curriculum for M 105 Contemporary Mathematics for Co-requisite adoption and scaling
- ○ Standardization of curriculum for M 121 College Algebra and M 122 College Trigonometry for adoption by dual credit teachers in High Schools

▷ **Service Involvements**

- ○ Academic Standards & Scholastic Standing Committee   Fall 2019 - 2019
- ○ Mathematics Scholarship Committee (Chair)   Fall 2015 - 2019
- ○ Arts & Sciences Curriculum Council   Fall 2013 - 2019
- ○ Dual Enrollment Faculty Liaison (mentor) for College Algebra and College Trigonometry   Fall 2014 - 20189
- ○ Montana Math Pathways and Co-requisite initiatives   AY 2016-2018
- ○ Undergraduate Research and Advising
  - * *Algorithms of Continued Fractions*   AY 2014-2015
    Student: Baudry Metangmo (presented in Undergraduate Poster Session at JMM, 2015)
  - * *Volumes of n-spheres*   AY 2018-2019
    Student: Mohammedreza Heidari (as a part of the student's Honors requirements)
- ○ Advising Math and Math Education majors   Fall 2013 - 2019
- ○ MSUB Math Club initiatives and Faculty Advisor   AY 2014-2015
- ○ Member of Search Committees for Mathematics, Finance and Accounting

▷ **Awards**

- ○ Nominated for Winston and Helen Cox Fellowship in Arts and Sciences 2013, 2015, 2018
- ○ Provost Professional Faculty Development Grants   2014, 2015, 2017
- ○ eLearning Faculty Development Grants   2014, 2018

RESEARCH
ACTIVITIES

General Interests

Applied analysis, control and systems theory, dynamical systems, moment problem, ordinary differential equations, statistics, data analysis, mathematics education (K-12 and undergraduate)

Refereed Journal Publications

[1] Jo Ann F. Cummings, Deborah Kennard, Judith Egan, Saroj Aryal, and Cindy McVey. Predicting nclex-rn first time pass rates. *Higher Education*, 2023. (Under Review)

[2] Saroj Aryal. Modifying certain terms of determinate Stieltjes moment sequences. *International Journal of Applied and Computational Mathematics*, 2022. (Under Review)

[3] Sarita Nemani, Saroj Aryal, Kaitlyn Bragen, and Alexa Curcio. Two New Properties Of The Fibonacci Sequence. *Applied Mathematics E-Notes*, 22:452–456, 2022

[4] Saroj Aryal and Sarita Nemani. Stability of polynomials under uniform perturbation. *Systems & Control Letters*, 160:105132, 2022

[5] Saroj Aryal, Hayoung Choi, and Farhad Jafari. Sparse Hamburger moment multisequences. In *Problems and recent methods in operator theory*, volume 687 of *Contemp. Math.*, pages 21–30. Amer. Math. Soc., Providence, RI, 2017

[6] Saroj Aryal, Hayoung Choi, and Farhad Jafari. Hamburger moment sequences and their moment subsequences. *Linear Multilinear Algebra*, 65(9):1838–1851, 2017

[7] Saroj Aryal and Rakesh Sah. Market Volatility and market indexed exchange traded funds. *Review of Business Research*, 14:163–170, 10 2014

In Progress

[1] Portfolio selection using higher moments

[2] Further work on Hurwitz stability of polynomials under uniform perturbations

Conference Talks

[1] Modifying certain terms of determinate moment sequences. *PosterFest 2022: Scholarship by Early Career Mathematicians*, MAA MathFest, Philadelphia, PA, August 2022

[2] On Hurtwiz stability of composite polynomials. *AMS Special Session on Continued Fractions*, Joint Mathematics Meetings (virtual), January 2021

[3] Perturbation of terms of S-fractions. *Contributed Papers Session*, AMS Western Sectional Meeting, Portland, OR, April 2018

[4] Orthogonal polynomials associated with multidimensional moment problem. *30-minute Invited Talk*, 5th International Science Congress, Kathmandu, Nepal, January 2016

[5] Effects of perturbation of terms of S-fractions in the corresponding Stieltjes transforms. *AMS Special Session on Continued Fractions*, Joint Mathematics Meetings, San Antonio, TX, January 2015

[6] Continued fractions method for moment sequences. *AMS Special Session on Continued Fractions*, Joint Mathematics Meetings, San Diego, CA, January 2013

[7] Sparse moment problem. *Special Session on Polynomial Methods for Differential Equations and Dynamical Systems*, The 9th AIMS Conference, Orlando, FL, July 2012

[8] Sparse moment sequences. *Contributed Papers Session*, MAA Rocky Mountain Section Meeting, Denver, CO, April 2012

[9] Exploring submoment sequences and sub-moment solutions. *Special Session on Applied Analysis*, AMS Western Sectional Meeting, Salt Lake City, UT, October 2011

Conference Attendance (without presentations)

[1] Understanding Mathematical Explanations: Uniting Philosophical and Educational Perspectives. Workshop, Rutgers University, New Brunswick, NJ, May 2023

[2] D2L Fusion, Houston, TX, July 2018

[3] Complete College Montana Momentum Academy, Bozeman, MT, March 2018

[4] Online Learning Consortium, Orlando, FL, November 2018

[5] Co-Requisite at Scale Conference, Bozeman, MT, November 2015

Skills

Computer Algebra Systems: Mathematica, Maple, Matlab, SageMath

Statistical Packages: SPSS, R, MS Excel

Programming tools: Python, C++, Java

Learning Management Systems: Blackboard, MyMathLab, D2L

Typesetting Tools: LaTeX, Microsoft Office Media

Professional Involvements

[1] Reviewer for Mathematical Reviews, American Mathematical Society, 2018 - present

[2] Science Advisory Board member, Atlantic Cape Community College, 2023 - present

(Compiled on January 2, 2024 at 11:26am EST.)