SHAN SHAN

CURRICULUM VITAE 2019

CONTACT INFORMATION

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RESEARCH INTERESTS

Diffuion geometry, Bayesian inference, Mathematical framework for machine learning, High-dimensional data analysis

PROFESSIONAL APPOINTMENTS

Duke University 2019 - present
Postdoctoral Research Fellow in Mathematics Durham, NC

EDUCATION

Duke University 2019
Ph.D. in Mathematics under the supervision of Ingrid Daubechies Durham, NC
Probabilistic Models on Fibre Bundles

Agnes Scott College 2014
B.A. in Mathematics *summa cum laude* Decatur, GA

Budapest Semesters in Mathematics 2013
Study Abroad Program for Undergraduate Students of Mathematics Budapest, Hungary

PUBLICATION

[1] **ariaDNE: a robustly implemented algorithm for Dirichlet Energy of the Normal.**
with S. Kovalsky, J. Winchester, D. Boyer, and I. Daubechies
Methods in Ecology and Evolution 10.4 (2019): 541-552.

IN PREPARATION

[1] **Probabilistic models on fibre bundles.**
with D. Sen, D. Boyer, S. Mukherjee and I. Daubechies

[2] **Tuning diffusion maps with semi-group test.**
with I. Daubechies

[3] **Improved diffusion maps with projected diffusion kernel method.**
with I. Daubechies

[4] **A unifying framework for shape models with fibre bundles.**
with B. Dumitrascu, S. Mukherjee

[5] **Adaptive radiation of lemurs on Madagascar.**
with E. Fulwood, I. Daubechies, D. Boyer

HONORS AND AWARDS

2019 SIAM Student Travel Award
2014 Phi Beta Kappa, Agnes Scott College

2014 Outstanding Presentation Award, Joint Mathematics Meetings Poster Session
2013 Wilson Asbury Higgs Mathematics Scholarship, Agnes Scott College
2013 Highest Honor, Budapest Semesters in Mathematics
2013 MAA Student Membership Award, Agnes Scott College
Departmental award for excellence in study
2012 Dana Leadership Scholar, Agnes Scott College

INVITED TALKS AND POSTERS

2019 Invited Presentation, Mount Holyoke College
2019 Invited Presentation, Data Science Consortium, Michigan Institute for Data Science (MIDAS), Michgan
2019 Invited Presentation, Statistical Analysis in Biophysics and Climate Symposium SIAM DS19, Snowbird, Utah
2019 Poster, Research Computing Symposium, Duke University
2018 Poster, Curves and Surfaces, Arcachon, France
2018 Invited Presentation, Daubechies 64, Hasselt University and Park Molenheide, Belgium
2018 Invited Presentation, Math Slam Research Symposium , Duke University
2015 Presentation, Southeastern Conference for Undergraduate Women in Math, Durham, NC
2014 Presentation, Spring Annual Research Conference, Agnes Scott College
2014 Poster, Joint Mathematics Meetings, Baltimore
2014 Presentation, Nebraska Conference for Undergraduate Women in Math, Lincoln, NE
2013 Presentation, BSM EUR Conference, Budapest Semesters in Mathematics
2013 Presentation, Southeastern Conference for Undergraduate Women in Math, Clemson, SC
2012 Presentation, Spring Annual Research Conference, Agnes Scott College

TEACHING

University of Washington
Instructor, 3D Morphometrics and Image Analysis Summer Workshop — Summer 2019
Duke University
Instructor of Record, Math 106L: Laboratory Calculus and Functions II — Spring 2018
Instructor, Summer Workshop in Mathematics (SWiM) — Summer 2017
Instructor of Record, Math 122L: Introductory Calculus II with Applications — Fall 2016
Instructor of Record, Math 105L: Laboratory Calculus and Functions I — Fall 2015
Lab Instructor, Math 111L: Laboratory Calculus and Functions I — Fall 2014
Agnes Scott College
Teaching Assistant, Math 118, Calculus I — Spring 2014
Recitation Instructor, Math 118: Calculus I — Fall 2013
Recitation Instructor, Math 119: Calculus II — Spring 2012
Recitation Instructor, Math 118: Calculus I — Fall 2012

UNDERGRADUATE RESEARCH MENTORING

2019 Duke University Undergraduate Research: Ashka Stephen

CONTRIBUTED SOFTWARE

Familiar with high-performance programming in Matlab, C/C++, Python, R.
Auto3dgm Slicer Extention 2019

A Slicer extension written in Python for automatically spreading landmarks and aligning mesh type data. https://github.com/ToothAndClaw/auto3dgmSlicerExtension

ariaDNE 2018

A robustly implemented algorithm written in Matlab for computing DNE on mesh type data. http://doi.org/10.5281/zenodo.1465949

MEDIA

2019 "Beautiful Math with Shan Shan, " Duke Research Computing Minute Marvels. https://rc.duke.edu/mm/

PROFESSIONAL SERVICE

2019 Referee of Electronic Journal of Statistics.

SERVICE AT DUKE UNIVERSITY

2019 Co-organizer of Spring Pop-up Party, Rhodes iiD
2019 Co-organizer of Chinese Spring Tea Party, Rhodes iiD
2018 Graduate student organizer of Summer Workshop in Mathematics (SWiM)
2017 Co-organizer of Graduate Student Sponsored Colloquia
2017 Co-organizer of Noethoerian Ring Women in Math Mentoring Program
2016 Cofounder and VP of SIAM student chapter
2015, 2016 Co-organizer of Graduate/Faculty Seminar, Department of Mathematics
2015 Co-organizer of Southeastern Conference for Undergraduate Women in Math
2015 Graduate student organizer of 100 Years of General Relativity talk