

Shan Shan Curriculum Vitae

Associate Professor, Mathematics and Computer Science, University of Southern Denmark

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PROFESSIONAL APPOINTMENTS

- 2024 – **Associate Professor**
2022 – 2024 Assistant Professor
2021 – 2022 Postdoctoral Research Fellow
2021 – Affiliated member of the Centre of Quantum Mathematics.
Department of Mathematics and Computer Science.
University of Southern Denmark.
- 2020 – 2021 **Tenure-track Assistant Professor.**
Department of Mathematics and Statistics.
Mount Holyoke College.
- 2019 – 2020 **Postdoctoral Research Fellow.**
Department of Mathematics.
Duke University.

EDUCATION

- Ph.D. Duke University**, Mathematics, 2014-2019
Title: “Probabilistic models on fiber bundles”.
Advisor: Ingrid Daubechies, Ph.D.
- B.A. Agnes Scott College**, Mathematics summa cum laude, 2010-2014

PUBLICATIONS

(authors are listed first-to-last, *authors are listed alphabetically)

Preprints

- *Jørgen Ellegaard Andersen, Shan Shan. 2025. Use Gaussian Boson Samplers to approximate Gaussian expectation problems. arXiv preprint. arXiv:2502.19336.
- *Jørgen Ellegaard Andersen, Shan Shan. 2025. Estimating the percentage of GBS advantage in Gaussian expectation problems. arXiv preprint. arXiv:2502.19362.

Felix Risbro Hjerrild, Shan Shan, Doug Boyer, Ingrid Daubechies. 2024. signDNE: A python package for ariaDNE and its sign-oriented extension. arXiv preprint. arXiv:2409.05549.

Peer-reviewed Articles

- *Jørgen Ellegaard Andersen, Anne-Marie Mai, Jakob Blaabjerg Møller, Shan Shan. 2024. ‘He Has the Whole Package: Lyrics, Melodies, Enigmatic, mythical’: Images of Bob Dylan – Results of Questionnaire. Aktualitet - Litteratur, Kultur Og Medier, s. 1-33.
- Maria Kjaergaard, Katrine Prier Lindvig, Katrine Holtz Thorhauge, Peter Andersen, Johanne Kragh Hansen, Nanna Kastrop, Jane Møller Jensen, Camilla Dalby Hansen, Stine Johansen, Mads Israelsen, Nikolaj Torp, Morten Beck Trelle, Shan Shan, Sönke Detlefsen, Steen Antonsen, Jørgen Ellegaard Andersen, Isabel Graupera, Pere Ginés, Maja Thiele, Aleksander Krag. 2023. Performance of Enhanced Liver Fibrosis test, FIB-4, and NAFLD fibrosis score in a screening study of 3,387 participants. Journal of

Hepatology. 79, 2, 277-286.

Genesis Lara Granados, Juliet Greenwood, Stephen Secor, Shan Shan, Brandon Hedrick, Patricia Brennan. 2022. Examining the shape and size of female and male genitalia in snakes using three-dimensional geometric morphometrics. *Biological Journal of the Linnean Society*, 136.3, 466-476.

Sara Rolfe, Steve Pieper, Arthur Porto, Kelly Diamond, Julie Winchester, Shan Shan, Henry Kirveslahti, Doug Boyer, Adam Summers, Murat Maga. 2021. SlicerMorph: An open and extensible platform to retrieve, visualize and analyze 3D morphology. *Methods in Ecology and Evolution*. 12(10): 1816-1825.

Ethan Fulwood, Shan Shan, Julia Winchester, Henry Kirveslahti, Robert Ravier, Shahar Kovalsky, Ingrid Daubechies & Doug Boyer. 2021. Reconstructing dietary ecology of extinct strepsirrhines (Primates, Mammalia) with new approaches for characterizing and analyzing tooth shape. *Paleobiology*. 47(4):612-631.

Ethan Fulwood, Shan Shan, Julia Winchester, Henry Kirveslahti, Tingran Gao, Doug Boyer, Ingrid Daubechies. 2021. Insights from macroevolutionary modeling and ancestral state reconstruction into the radiation and historical dietary ecology of Lemuriformes (Primates, Mammalia). *BMC Evolutionary Biology*. 21, 60.

Shan Shan, Shahar Z. Kovalsky, Julie M. Winchester, Doug M. Boyer, Ingrid Daubechies. 2019. ariaDNE: A Robustly Implemented Algorithm for Dirichlet Energy of the Normal. *Methods in Ecology and Evolution*.

Book chapters

Shan Shan, Ingrid Daubechies. 2023. Diffusion Maps: Using the Semigroup Property for Parameter Tuning. *Theoretical Physics, Wavelets, Analysis, Genomics*. Springer, 409-424.

PRESENTATIONS

Seminars

2024 Research Center of Mathematics and Interdisciplinary Sciences of Shandong University.

2024 IMADA talk, University of Southern Denmark. Odense, Denmark.

2024 BigQ Seminar. Danmarks Tekniske Universitet. Lyngby, Denmark.

2023 Danish Meteorological Institute. Copenhagen, Denmark.

2019 Memorial Sloan Kettering Cancer Center. New York City, NY, USA.

2019 Math and statistics seminar, Mount Holyoke College. South Hadley, MA, USA.

2017 Math Slam Research Symposium at Duke University. Durham, NC, USA.

Conferences

2025 Workshop on Quantum Applications in Integrated Photonics. Ljubljana, Slovenia.

2024 Workshop on Quantum Key Distribution for Enterprises and Governments. Copenhagen, Denmark.

2024 Workshop in honor of Ingrid Daubechies at Duke University. Durham NC, USA.

2024 Scientific Quantum Conference. Odense, Denmark.

2024 Joint Mathematics Meetings, San Francisco CA, USA

2024 International Conference for Women in Mathematics. Copenhagen, Denmark.

2023 DIREC/SDU workshop on quantum computing. Odense, Denmark.

2023 International conference for Women Mathematicians in Sciences. Odense, Denmark.

2019 SIAM Conference on Dynamical Systems. Snowbird, UT, USA.

2019 Joint Mathematics Meetings. Denver, CO, USA.

2019 Data Science Consortium Conference. Michigan Institute for Data Science. Ann Arbor, MI, USA.

2018 Daubechies 64. Hasselt University and Park Molenheide, Belgium.

2015 Southeastern Conference for Undergraduate Women in Math. Durham, NC, USA.

- 2014 Spring Annual Research Conference. Agnes Scott College. Decatur, GA, USA.
- 2014 Nebraska Conference for Undergraduate Women in Math. Lincoln, NE, USA.
- 2013 Southeastern Conference for Undergraduate Women in Math. Clemson, SC, USA.
- 2013 BSM EUR Conference. Budapest Semesters in Mathematics. Budapest, Hungary.
- 2012 Spring Annual Research Conference. Agnes Scott College. Decatur, GA, USA.

Lecture series and tutorials

- 2022 Robotics Elite Summer School. Odense, Denmark.
- 2020 3D Morphometrics and Image Analysis Workshop. University of Washington. Friday Harbor WA, USA.
- 2019 3D Morphometrics and Image Analysis Workshop. University of Washington. Friday Harbor WA, USA.
- 2017 Summer Workshop in Mathematics (SWiM). Duke University. Durham NC, USA.

TEACHING

University of Southern Denmark

- AI503 Calculus. Fall 2024, Fall 2025
- MM571 First Year Project. Spring 2024, Spring 2025

Mount Holyoke College

- Stat 140 Introduction to the Ideas and Applications of Statistics. Fall 2020

Duke University

- Math 106L Laboratory Calculus and Functions II. Spring 2018
- Math 122L Introductory Calculus II with Applications. Fall 2016
- Math 105L Laboratory Calculus and Functions I. Fall 2015

SUPERVISION OF STUDENTS

Master students

- 2024 Tobias Fiskbæk Juul (Biochemistry and Molecular Biology), co-supervisors: Maria Timofeeva and Veit Schwämmle, University of Southern Denmark
- 2024 Asmus Tørsleff (Quantum information), co-supervisors: Ulrik Lund Andersen and Jørgen Ellegaard Andersen, University of Copenhagen and Danish Technical University
- 2023 Jakob Blaabjerg Møller (Data science), co-supervisor: Jørgen Ellegaard Andersen, University of Southern Denmark

Bachelor students

- 2024 Felix Risbro Hjerrild (Applied Mathematics), University of Southern Denmark
- 2024 Kristoffer Hagedorn Larsen (Applied Mathematics), University of Southern Denmark,
- 2021 Martin Christensen and Jeppe Vinkel Beier (Robotics), co-supervisor: Henrik Gordon Petersen, University of Southern Denmark
- 2019 Ashka Stephen (Computer Science), co-supervisor: Sayan Mukherjee, Duke University

ORGANIZATION OF CONFERENCES, SEMINARS AND WORKSHOPS

Conferences and workshops

- 2024 Special session “Computational Techniques to Study the Geometry of the Shape Space” at Joint Mathematics Meetings. San Francisco, CA, USA. Co-organizer with Shira Faigenbaum and Ingrid Daubechies.
- 2023 Special session “Quantum computing in its NISQ era” at Nordic Congress of Mathematics. Aalborg, Denmark. Co-organizer with Jørgen Ellegaard Andersen, Peter van Loock, Damian Markham.

Seminars

- 2016 Co-organizer with Sarah Ritchey. Math Graduate-Faculty Seminar. Duke University.
- 2015 Co-organizer with Sarah Ritchey. Math Graduate-Faculty Seminar. Duke University.

PROFESSIONAL SERVICE

Refereeing

Electronic Journal of Statistics, IEEE BITS Magazine, American Journal of Physical Anthropology

Grant and fellowship committee

Danish quantum algorithm academy under DeiC

HONORS AND AWARDS

- 2014 Phi Beta Kappa, Agnes Scott College
- 2014 Outstanding Presentation Award, Joint Mathematics Meetings
- 2013 Wilson Asbury Higgs Mathematics Scholarship, Agnes Scott College
- 2013 Highest Honor, Budapest Semesters in Mathematics
- 2013 Departmental Award for Excellence in Study, Agnes Scott College