

Aarathi Parameswaran

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Education

Indiana University

Ph.D. in Informatics, Luddy School of Informatics, Computing and Engineering
Specialization: Complex Networks and Systems

Bloomington, Indiana

2025–present

University of Bonn

M.Sc. in Physics, Bonn-Cologne Graduate School of Physics and Astronomy

Specialization: Theoretical and Experimental Physics, Network Science

Relevant coursework: Advanced Quantum Theory, Particle Physics, Statistical Data Analysis, Complex Networks and Energy Grids, Quantum Computing, Quantum Optics, Theoretical Neuroscience, Energy Production.

Bonn, Germany

2022–2025

Azim Premji University

B.Sc. (Hons) in Physics, School of Arts and Sciences

Specialization: Nonlinear Dynamics

Minor: Media and Democracy

Relevant coursework: Advanced Mechanics, Quantum Mechanics, Nonlinear Dynamics, Solid State Physics, Optics, Thermodynamics, Computing in Physics, Political Philosophy, Media Studies.

Bangalore, India

2019–2022

Experience

Center for Complex Networks and Systems, Indiana University

Bloomington, Indiana

Research Assistant

2026–present

Topic: Bridge Criticality in a Spatial Road Network

Supervisor: Prof. Filippo Radicchi

Group: Radicchi-Fortunato Lab

Forschungszentrum Jülich and University of Cologne

Cologne, Germany

2024–2025

Master's Thesis

Topic: Structural Transitions in Optimal Networks.

Supervisor: Prof. Dirk Witthaut.

Group: Network Science (Cologne) and Energy Networks and Complex Systems (FZ Jülich).

Institute for Applied Physics, University of Bonn

Bonn, Germany

2023–2024

Graduate Assistant

Supervisor: Prof. Sebastian Hofferberth.

Group: Nonlinear Quantum Optics

Azim Premji University

Bangalore, India

2021–2022

Bachelor's Thesis

Topic: Investigating Taylor-Couette Flow.

Supervisor: Dr. Kaustubh Manchanda.

Workshops & Schools

Complexity Science Winter School

Vienna, Austria

February 2025

Complexity Science Hub

Project: Impact of Internet Shutdowns on Collective Action in Conflict Regions.

Complexity72h Workshop

Madrid, Spain

June 2024

Universidad Carlos III de Madrid

Project: Metro Networks Efficiency using Max-Plus Algebra. Supervisor: Dr. Ebrahim Patel.

Spring College on the Physics of Complex Systems

International Center for Theoretical Physics

Courses: Courses: Statistical Mechanics of Random Matrices, Thermodynamics of Information, Collective Dynamics, RNA Physics.

Trieste, Italy

February 2024

Introductory Summer School on Astronomy and Astrophysics

Inter-University Centre for Astronomy and Astrophysics

Pune, India

May 2022

Gravitational Waves Data Analysis Workshop

International Center for Theoretical Sciences

Bangalore, India

May 2022

Conferences and Talks

NetSci Conference

Contributed Talk

Presentation: Symmetry Breaking in Minimum Dissipation Networks

Maastricht, Netherlands

June 2025

Infosys Science Foundation

Invited Talk

Bangalore, India

July 2022

Awards & Honors

2025: Associate Instructor Fellowship, Luddy School of Informatics, Computing and Engineering

2025: Summer Fellowship, Luddy School of Informatics, Computing and Engineering

2025: Lagrange Fellowship (declined), ISI Foundation, Turin.

2022: International Max Planck Research Scholarship (declined), MPI for Solid State Physics, Stuttgart.

2022: Honor's Degree, Azim Premji University, Bangalore

Skills

Programming: Python, Mathematica, MATLAB, R

Libraries: NetworkX, Qiskit, seaborn, sklearn, iminuit

Typesetting: \LaTeX

Other Achievements and Interests

Student Council: BCGS (2023), Azim Premji University (2019–2021).

Interests: Football (soccer), Reading, Running, Music Instrumentalist, Philosophy of Science, Linguistics.