

Nicholas J. Dubicki

Adjunct Professor

Dept. of Mathematical Sciences, New Jersey Institute of Technology

323 Dr. Martin Luther King Blvd. Newark, NJ, 07102

Phone: (603) 757 3336

Email: nickdubicki@gmail.com

Website: <https://web.njit.edu/~njd48>

Education

Ph.D. in Mathematical Sciences | 08/2024 | New Jersey Institute of Technology | Newark, NJ

Advisors: Cyrill B. Muratov, Università di Pisa; and Michael Siegel, NJIT

M.S. in Applied Mathematics | 08/2019 | University of New Hampshire | Durham, NH

Advisors: Christopher M. White and Gregory P. Chini

B.S. in Mechanical Engineering | 05/2017 | University of New Hampshire | Durham, NH

Magna Cum Laude

Employment

Adjunct Professor of Mathematics | 08/2024 - Present | New Jersey Institute of Technology | Newark, NJ

- Deliver instruction for Calculus II; managing 60 students; collaborate on curricula with multiple instructors.

Teaching and Research Assistant | 08/2019 - 08/2024 | New Jersey Institute of Technology | Newark, NJ

- Developed and treated models of magnetic materials with the GPU accelerated Mumax3 software.
- Optimized computational accuracy and efficiency.
- Utilized symmetries and physics principles to discover new existence and collapse criteria of magnetic skyrmions in thin ferromagnetic systems.
- Communicated results and impact to diverse audiences by research talks, posters, and journal articles.
- Equipped colleagues with essential tools by leading workshops on research software for PhD students.
- Coordinated social events for PhD students across multiple academic departments.

Teaching and Research Assistant | 08/2017 - 08/2019 | University of New Hampshire | Durham, NH

- Developed scientific software for the modeling of vapor compression refrigeration cycles.
- Established feasibility of minimal weight refrigeration cycles under diverse operating conditions.
- Delivered instruction to students in 'Experimental Methods / Data Analysis' and 'Thermal System Analysis' by supervised laboratory experiments and project based learning.

Research Support Associate | 05/2017 - 08/2017 | Massachusetts Institute of Technology | Cambridge, MA

- Analyzed and formulated acoustic wave equations to classify emergent structures for sonar reflection and transmission at a fluid-solid interface. Summarized and communicated findings to industry partners.

Research Interests

- Mathematical Physics, PDEs, Nonlinear Waves, Optimization
- Dynamics of Ferromagnetic Materials
- Thermal Systems, Fluid Dynamics, Geophysical Fluid Dynamics

Awards

- Daljit S. Ahluwalia Doctoral Fellowship, New Jersey Institute of Technology

Skills

MATLAB, C++, Python, Solidworks, OpenFOAM, mumax3, Bash Scripting, SLURM, OpenMP, Spanish (Conversational reading/writing/speaking)

Publications

1. N. J. Dubicki, *A Micromagnetic Study of Skyrmions in Thin-Film Multilayered Ferromagnetic Materials*, PhD thesis, New Jersey Institute of Technology, Newark, NJ, 2024.
2. N. J. Dubicki, *Use of Optimization Techniques in the Steady State Simulation of Vapor Compression Refrigeration Cycles*, Master's thesis, University of New Hampshire, Durham, NH, 2019.

Manuscripts in Preparation

3. A. Bernand-Mantel, N. J. Dubicki, C. B. Muratov, and T. M. Simon, *Stray field enabled skyrmions in ferromagnetic films of finite thickness*, 2025. Manuscript in Preparation.
4. A. Bernand-Mantel, N. J. Dubicki, C. B. Muratov, and V. V. Slastikov, *Bloch skyrmions in stray field coupled magnetic multilayers*, 2025. Manuscript in Preparation.

Seminars and Presentations

- Conference Poster. "Reevaluating Stability of Stray Field Driven Magnetic Skyrmions in Thin-Film Ferromagnetic Materials". Frontiers of Applied and Computational Mathematics. NJIT. Newark, NJ. May, 2023
- Department Talk. "Skyrmions in Ferromagnetic Thin-Film Bilayers". NJIT. Newark, NJ. July, 2022
- Department Talk. "Topologically Nontrivial Magnetic Structure in 2D". NJIT. Newark, NJ. July 2021
- Department Talk. "Electrostatics". NJIT. Newark, NJ. January, 2020
- Department Talk. "Inviscid and Irrotational Fluid Dynamics". NJIT. Newark, NJ. December, 2019

Professional References

Cyrill B. Muratov, cyrill.muratov@unipi.it
Professor of Mathematics, Università di Pisa
Primary Dissertation Advisor for my PhD at NJIT

Michael S. Siegel, michael.siegel@njit.edu
Professor of Mathematics, New Jersey Institute of Technology
Secondary Dissertation Advisor at NJIT

Christopher M. White, chris.white@unh.edu
Professor and Chair of Mechanical Engineering, University of New Hampshire
Primary Master's Thesis Advisor at UNH

Gregory P. Chini, greg.chini@unh.edu
Professor of Mechanical Engineering, University of New Hampshire
Chair of Integrated Applied Mathematics, University of New Hampshire
Master's Thesis Advisor at UNH