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Education

Ph.D. Physics, University of Minnesota 2006.
PhD Thesis: “Knot Entropy,” thesis advisor A.Y. Grosberg.
B.S. Applied Physics, Grove City College 2000

Timeline

Professor of Physics	2015-present
Physics Chairperson	2012-13, 2019-2022
Associate Professor of Physics	2010-2015
Assistant Professor of Physics	2005-2010
Winona State University	Winona, Minnesota
Blue Gene Science Application Analysis	2005
IBM	Rochester, Minnesota
Research and Teaching Assistant	2000-2005
Physics Department and Army HPCRC	University of Minnesota, Minneapolis

Publications

“Three chapters of homework in 11 minutes?” Nathan Moore Phys. Teach. 63, 624–625 (2025) <https://doi.org/10.1119/5.0289962>

“How Many Acres of Potatoes Does a Society Need? Using Food and Historical Claims in an Energy Context.” Nathan T. Moore Phys. Teach. 63, 595–599 (2025) <https://doi.org/10.1119/5.0193574>

“Don’t throw that video away! Reference Frames can fix Video Analysis with a Moving Camera,” Nathan T. Moore. IOP Physics Education. 59 (2024) 015029. <https://arxiv.org/abs/2301.00013>

“Inexpensive Student-fabricated Solar Panels and Some Related Classroom Measurements,” Nathan T. Moore and Carl D. Ferkinhoff. Submitted. <https://arxiv.org/abs/1712.04029>

“A model for including Arduino microcontroller programming in the introductory physics lab,” Andrew J. Haugen and Nathan T. Moore. Submitted. <http://arxiv.org/abs/1407.7613>

“Small Oscillations via Conservation of Energy,” Tia Troy, Megan Reiner, Andrew J. Haugen, and Nathan T. Moore. (IOP) Physics Education, vol. 52, no. 6, 2017. <http://arxiv.org/abs/1407.5243>

“Using Cognitive Acceleration Materials to Develop Pre-Service Teachers’ Reasoning and Pedagogical Expertise,” Nathan Moore, Jacqueline O’Donnell, and Dennis Poirier. 2012 ASQ Advancing the STEM Agenda in Education, the Workplace and Society. (peer reviewed) <http://asq.org/qic/display-item/index.html?item=34852>

“Computational Physics and Reality: Looking for Some Overlap at the Blacksmith Shop”, Nathan Moore and Nicole Schoolmeesters, submitted.

<http://arxiv.org/abs/0904.3960>

“Using Garlic As A Far-Transfer Problem of Proportional And Probabilistic Reasoning”, Nathan Moore and John Deming, Mathematics Teacher, August 2010.

<http://arxiv.org/abs/0811.2133>

“Measuring the 2D Vector Aspect of Momentum Using Only One Dimension”, Andrew Ferstl and Nathan Moore, submitted.

<http://arxiv.org/abs/0803.4142/>

“Abundance of unknots in various models of polymer loops”, N.T. Moore and A.Y. Grosberg, J. Phys. A: Math. Gen. 39, 9081, (2006).

<http://arxiv.org/abs/cond-mat/0604225/>

“On the Limits of Analogy Between Self-Avoidance and Topology-Driven Swelling of Polymer Loops”, N.T Moore and A.Y. Grosberg, Phys. Rev. E 72, 061803 (2005).

<http://arxiv.org/abs/cond-mat/0506786>

“Topologically Driven Swelling of a Polymer Loop”, N.T. Moore, R.C. Lua, A.Y. Grosberg. Proc. Natl. Acad. Sci. USA 101(37), 13431-13435, (2004).

<http://arxiv.org/abs/cond-mat/0403419/>

“Under-knotted and over-knotted polymers: 1. Unrestricted loops”, N.T. Moore, R.C. Lua, A.Y. Grosberg, in Physical and Numerical Models in Knot Theory, Including Applications to the Life Sciences, Series on Knots and Everything 36 363-384 (World Scientific)

<http://arxiv.org/abs/cond-mat/0403457/>

“Under-knotted and over-knotted polymers: 2. Compact self-avoiding loops”, R.C. Lua, N.T. Moore, A.Y. Grosberg, in Physical and Numerical Models in Knot Theory, Including Applications to the Life Sciences, Series on Knots and Everything 36 385-398 (World Scientific)

<http://arxiv.org/abs/cond-mat/0403413/>

Grants and Workshops

(2019) Winona State Digital Faculty Fellow: set up, develop problems for, and share awareness of the <https://www.lon-capa.org/> open-source homework system at Winona State.

(2017) With Hannah Leverentz, \approx \$25K to publicize “Open Educational Resources,” by organizing a series of <https://software-carpentry.org/> workshops at Minnesota State institutions.

(Summers 2012, 2013, & 2015) Modeling Instruction Workshop for secondary science teachers at Winona State University.

Professional Associations

American Association of Physics Teachers

American Modeling Teachers’ Association (AMTA, life member).

IEEE Senior member, (2016–present).

Certified Software Carpentry Instructor, Dec 2016.

This document was generated on October 31, 2025