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Engineering & Scientific Consulting

Dylan Roderick, Ph.D.

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Professional Profile

Dr. Roderick's background is in experimental physics specializing in magnetic systems, microscopic mechanics, and optics. At Exponent, he assists clients with a variety of applications by drawing from his extensive experience working with magnetic materials and electronic systems. He has worked with physics, biology, and engineering labs and developed an array of skills involving electronic device analysis and repair, video and image editing, CAD, and data analysis.

Dr. Roderick received his Ph.D. in Physics from The Ohio State University. His research focused on the control and use of microscopic magnetic systems. Using microscopic machines built with DNA and controlled with magnetic microbeads, he investigated magnetic phenomena and molecular forces. Additionally, he led a team in the construction of a system that tracked microscopic magnetic objects and controlled their movement in real time. As part of this dissertation work, he developed programs for analysis in MATLAB and neural network tracking algorithms in Python and C# and built multiple unique microscope systems.

Academic Credentials & Professional Honors

Ph.D., Physics, The Ohio State University, 2023

B.S., Physics, University of Illinois, Urbana-Champaign, 2014

Professional Affiliations

American Physical Society (APS), Member

Publications

Prikockis M, Wijesinghe H, Chen A, VanCourt J, Roderick D, Sooryakumar R. An on-chip colloidal magneto-optical grating. Appl. Phys. Lett. 108, 161106 (2016).

Doctoral Thesis:

Roderick D. Experiments with Dynamically Controlled Magnetic Micromachines: Levers, Hinges, and Beads. The Ohio State University, Columbus, OH, 2023.

Presentations

Brillouin Light Scattering (BLS) Microscopy and Applications, Graduate Summer Research Presentation, The Ohio State University, August 2015

Optimization of the Mu2e Apparatus Muon Stopping Target, Undergraduate Research Seminar,
University of Illinois at Urbana-Champaign, January 2014