

# Nathan P. M. Holt

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## Education

- Graduate

Ph.D., Theoretical Nuclear Physics, Texas A&M University, 2010-2016

- Undergraduate

Nashville State Community College, 1997 - 1999

Middle Tennessee State University, 1999 - 2003, 2006-2009

B.S., University Studies, focus on College of Science

Minor in Physics

Theoretical Physics Award for Excellence, 2008

## Teaching

- Lecturer of Physics, Texas A&M University, August 2022 - Present

- Assistant Professor, Piedmont University, July 2017 - May 2022

Unique courses taught (20): *University Physics I, University Physics II, University Physics III, University Physics Lab I, University Physics Lab II, Advanced Physics Lab I, Advanced Physics Lab II, College Physics I, College Physics II, College Physics Lab I, College Physics Lab II, Classical Mechanics, Modern Physics, Thermodynamics, Materials, Electricity & Magnetism, Quantum Mechanics, Mathematical Methods in Physics and Engineering, Introduction to Particle Physics, Advanced Topics in Modern Physics (Seminar)*

Rewrote course catalog entries for physics courses

Rewrote web page text for Applied Physics and Engineering Physics majors

Restructured labs for introductory and advanced physics courses

Restructured curricula for Applied Physics, Engineering Physics, and Engineering Science majors

Created new major in Engineering Praxis

Served as academic advisor for students majoring in Applied Physics, Engineering Physics, Engineering Science, and Engineering Praxis

- Assistant Lecturer, Texas A&M University, Summer 2016

*Modern Physics for Engineers*: Sole instructor, composed and graded all homework assignments and exams. Course covered special and general relativity, introductory quantum mechanics, atomic and electronic structure.

- Master Graduate Teaching Assistant, Texas A&M University, Fall 2015

*Electricity & Optics*: Supervised and instructed other graduate TAs, composed weekly quizzes for 700+ students, advised professors on student progress and exam questions

- Graduate Teaching Assistant, Texas A&M University, 9 semesters total

*Mechanics*: Fall 2010, Fall 2011, Fall 2013, Spring 2014, Fall 2014, Spring 2015

*Electricity & Optics*: Spring 2011, Spring 2012 (honors sections), Fall 2012

- Graduate/Undergraduate Lecture Experience

*Electricity & Optics*, Texas A&M University: 2 lecture sessions, covering introduction and Coulomb's Law

*Advanced Electricity & Magnetism II*, Texas A&M University: 1 lecture session covering introductory special relativity

## Science Outreach

- Physics and Engineering Festival, Texas A&M (2011-2014): Volunteered at the Texas A&M Department of Physics and Astronomy, together with the College of Science and Departments of Aerospace Engineering, Chemistry, Mathematics, Atmospheric Sciences, and the Brazos Valley Museum of Natural History
- Saturday Morning Physics, Texas A&M (2012-2016): Volunteered at National Science Foundation-funded event series designed to introduce Texas high school students to modern physics
- Boys Exploring Science and Technology (BEST) Camp, Vanderbilt University Center for Science Outreach (2009-2010): Employed at camp committed to generating interest in science for all boys, engaging them in cooperative learning in science investigations, fostering confidence in science achievement, and encouraging their enrollment in future science courses and in science- and technology-related careers

## Research

- Publications

Paper: *Baryonic Sources of Thermal Photons*; **Nathan P. M. Holt**, Ralf Rapp; Eur. Phys. J. A 56, 292 (2020)

Dissertation: *Sum Rules and Photon Emission from Hadronic Matter*, 2016

Paper: *Thermal Photon Emission from the  $\pi\rho\omega$  System*; **Nathan P. M. Holt**, Paul M. Hohler, Ralf Rapp; Nucl. Phys. A 945 (2016) 1-20

Paper: *Quantitative Sum Rule Analysis of Low-Temperature Spectral Functions*; **Nathan P. M. Holt**, Paul M. Hohler, Ralf Rapp; Phys. Rev. D 87, 076010 (2013)

Textbook: *Tensors for Undergraduate Physics Majors*, 2009

Letter to the Editor: Magazine: *Odyssey: Space Exploration and Astronomy for Young People*, June 1990

- Interests

Relativistic heavy-ion collisions: chiral symmetry breaking/restoration, electromagnetic probes of hadronic matter

Quantum chromodynamics vacuum: instantons, hadron structure

Quantum field theory: effective field theory, phenomenological hadronic models, finite-temperature field theory

- Student Research

Harrison Labollita (Piedmont '19): Senior Thesis: *Omega Meson Contribution to Muon Anomalous Magnetic Moment*; currently in graduate study at Arizona State University

Bryan Whitacre (Piedmont '20): Senior capstone project: *Three-Dimensional Deformation of a Bridge Truss Design*

Alaqua Crawford (Piedmont '22): Senior capstone project: *Gravitational Wave Detection: Theory and Practice*

- Invited Talks

Texas A&M University Cyclotron Institute: October 2019, *The Muon and the (Piedmont) Lion: A Tale of Research at a Teaching College*

Middle Tennessee State University: April 2009, *Tensor Analysis for Undergraduate Physics Majors*, given to local chapter of Society of Physics Students

## Professional/Teaching Development

- STEM Teaching Professional Development Course, Texas A&M: Topics covered: Integrated course design (learning outcomes, assessments, learning experiences, teaching methods), classroom management strategies; teaching philosophy statements; self-assessment, reflection, and peer review; syllabus design
- Completed Graduate Student Professional Development in Teaching, Fall 2014 Seminar Series by TAMU Dept. of Physics and Astronomy
- Reached level of "Practitioner" recognized by Center for Integration of Research, Teaching, and Learning (CIRTL) and TAMU Center for Teaching Excellence