Nicholas T. Young

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EDUCATION

- Ph.D., Physics and Computational Mathematics, Science, and Engineering, Michigan State University, 2021
  - Disseration: *The Past, Present, and Future of Graduate Admissions in Physics*
- M.S., Physics, Michigan State University, 2020
- B.S, Physics & Astronomy, Ohio State University, 2017

APPOINTMENTS

- Postdoctoral researcher, Center for Academic Innovation, University of Michigan, 2021

PEER-REVIEWED JOURNAL PUBLICATIONS

- **Nicholas T. Young**, Marcos D. Caballero. Predictive and explanatory models might miss informative features in educational data. *Journal of Educational Data Mining*, 13 (4), 2021
- **Nicholas T. Young**, Marcos D. Caballero. Physics Graduate Record Exam does not help applicants "stand out." *Physical Review Physics Education Research,* 17:010144, 2021
- Nils J. Mikkelsen, **Nicholas T. Young**, Marcos D. Caballero. Investigating institutional influence on graduate program admissions by modeling physics Graduate Record Examination cutoff scores. *Physical Review Physics Education Research,* 17:010109, 2021
- Dehui Hu, Kingston Chen, Anne E. Leak, **Nicholas T. Young**, Brianna Santangelo, Benjamin M. Zwickl, and Kelly Norris Martin. Characterizing mathematical problem solving in physics-related workplaces using epistemic games. *Physical Review Physics Education Research*, 15:020131, 2019
- **Nicholas T. Young**, Grant Allen, John M. Aiken, Rachel Henderson, and Marcos D. Caballero. Identifying features predictive of faculty integrating computation into physics courses. *Physical Review Physics Education Research*. 15:010114, 2019
- **Nicholas T. Young** and Andrew F. Heckler. Observed hierarchy of student proficiency with period, frequency, and angular frequency. *Physical Review Physics Education Research*. 14:010104, 2018

PEER-REVIEWED CONFERENCE PROCEEDINGS

- **Nicholas T. Young** and Marcos D. Caballero. Using Machine Learning to Understand Physics Graduate School Admissions. In *Proceedings of the 2019 Physics Education Research Conference,* 2019
- **Nicholas T. Young**, Brianna Santangelo, Kelly Norris Martin, Anna E. Leak, and Benjamin M. Zwickl. Models of Math Use in Non-Academic Workplace Settings. In *Proceedings of the 2017 Physics Education Research Conference,* 2017

- Brianna Santangelo, **Nicholas T. Young**, Anna E. Leak, Kelly Norris Martin, and Benjamin M. Zwickl. Integration of mathematics and communication in physics-intensive workplaces. In *Proceedings of the 2017 Physics Education Research Conference,* 2017
- J. R. Smith, A. Byrum, T. M. McCormick, **Nicholas T. Young**, Christopher Orban, and C. D. Porter. A Controlled Study of Stereoscopic Virtual Reality in Freshman Electrostatics. In *Proceedings of the 2017 Physics Education Research Conference,* 2017

PEER-REVIEWED WHITE PAPERS
- Daniel Puentes, Matthew J. Kuhn, Chelsie Boodoo, Kylie R. Smith, **Nicholas T. Young**. The Possible Expiration of the New START, the Last Nuclear Bilateral Treaty Between the United States and the Russian Federation. *Journal of Science Policy and Governance*, Vol 16 Issue 01, 2020

UNDER REVIEW JOURNAL PUBLICATIONS
- **Nicholas T. Young**, K. Tollefson, Remco G. T. Zegers, Marcos D. Caballero. Rubric-based holistic review: a promising route to equitable graduate admissions in physics (*arXiv physics.ed-ph*:2110.04329)
- **Nicholas T. Young**, N. Verboncoeur, Dao Chi Lam, Marcos D. Caballero. Rubric-based holistic review represents a change from traditional graduate admissions approaches in physics (*arXiv physics.ed-ph:* 2112.06886)

UNDER REVIEW CONFERENCE PROCEEDINGS
- Sarah Jane Bork, **Nicholas T. Young**, Joi-Lynn Mondisa. Exploring the Relationship Between Culture and Science, Engineering, and Mathematics Graduate Students' Mental Health. *American Association of Engineering Educations Annual Conference* (2022)
- **Nicholas T. Young**, Rebecca L. Matz, Eric Bell, Caitlin Hayward. Comparing two methods to calculate student's grade point average in other courses. *Proceedings of the Eighth ACM Conference on Learning @ Scale* (2022)

AWARDS AND FELLOWSHIPS
- American Association for the Advancement of Science Mass Media Fellowship, 2021
- Michigan State University College of Natural Science Disseration Completion Fellowship, 2021
- Michigan State University Hub for Innovation in Teaching and Learning Graduate Fellowship, 2020
- Physics Education Research Conference Proceedings Notable Paper, 2019
- Michigan State University College of Natural Science Recruiting Fellowship, 2017

INVITED TALKS
- **Nicholas T. Young**, Grant Allen, John M. Aiken, Rachel Henderson, and Marcos D. Caballero. Why physics instructors choose to include computation in their courses. 2021

Partnership for Integrating Computation into Undergraduate Physics (PICUP) Capstone Conference.
- **Nicholas T. Young**, Marcos D. Caballero. Addressing Rare Outcomes in PER Quantitative Studies. 2021 American Association of Physics Teachers Winter Meeting.

CONFERENCE ACTIVITY
- **Nicholas T. Young**, Aalayna Green, Caroline Blommel, Ellie Louson. Developing a Faculty-Facing Resource for Experiential Interdisciplinary Undergraduate Teaching, xDBER 2021, virtual, poster
- **Nicholas T. Young**, Marcos D. Caballero. Addressing Rare Outcomes in PER Quantitative Studies. 2021 American Association of Physics Teachers Winter Meeting, virtual, poster
- **Nicholas T. Young**, Marcos D. Caballero. The Physics GRE does not help "overlooked" applicants. 2020 American Association of Physics Teachers Summer Meeting, virtual, poster/contributed talk
- **Nicholas T. Young**, Marcos D. Caballero. Using Machine Learning to Understand Physics Graduate School Admissions. 2019 American Association of Physics Teachers Summer Meeting, Provo, Utah, poster/contributed talk
- **Nicholas T. Young.** PERbites. 2019 Communicating Science Conference – American Institute of Physics, College Park, Maryland, poster
- **Nicholas T. Young**, Marcos D. Caballero. Using Machine Learning to Predict Integrating Computation into Physics Courses. 2018 American Association of Physics Teachers Summer Meeting, Washington D.C., poster/contributed talk
- **Nicholas T. Young**, Marcos D. Caballero. Using Machine Learning to Predict Integrating Computation into Physics Courses. 2018 Spring Meeting of the APS Ohio-Region Section and the AAPT Michigan Section, East Lansing, Michigan, poster
- **Nicholas T. Young**, Andrew F. Heckler. Modeling Student Understanding of Period, Frequency, and Angular Frequency. 2017 American Association of Physics Teachers Summer Meeting, Cincinnati, Ohio, poster/contributed talk
- **Nicholas T. Young**, Brianna Santangelo, Kelly Norris Martin, Anne E. Leak, Benjamin M. Zwickl. Models of Math Use in Non-Academic Workplace Settings. 2017 Physics Education Research Conference, Cincinnati, Ohio, poster

SUPERVISED PERSONNEL
Undergraduate students supervised on research
- Chi Dao Lam (Michigan State University, Spring 2021- Summer 2021)
- Nicole Verboncoeur (Michigan State University, Spring 2020-Summer 2021)
- Nils Johannes Mikkelsen (University of Oslo, Summer 2019-Fall 2020)
- Tabitha Hudson (Michigan State University, Spring 2020-Summer 2020)

TEACHING EXPERIENCE
- Teaching Assistant, Lyman Briggs College, Michigan State University, 2018-2019
  Courses: Physics I, Physics II

RESEARCH EXPERIENCE
- **Graduate Research Assistant** (Michigan State University, 2017-2021)
  Applied machine learning algorithms to understand why faculty decide to teach computation in their physics classes and to understand how physics graduate school admissions decisions are made. Conducted simulations to understand potential machine learning biases on educational data.
- **Graduate Fellow** (Michigan State University Hub for Innovation in Teaching and Learning, 2020-2021)
  Formulated communication strategy to recruit faculty to develop and teach interdisciplinary, experiential learning courses. Designed and reviewed a toolkit and playbook for faculty to develop such courses.
- **Summer REU student,** (Rochester Institute of Technology, 2016)
  Analyzed transcripts from employees at optics and photonics companies to understand how they used math in the workplace.
- **Undergraduate Research Assistant** (Ohio State University, 2015-2017)
  Created assessments to understand introductory physics students' skills regarding period, frequency, and angular frequency of oscillatory systems. Developed a tutorial to improve students' skills in these areas.

SERVICE
- American Association of Physics Teachers Committee on Graduate Education in Physics member (fall 2020-current)
- Cientifico Latino Graduate School Mentorship Initiative mentor (fall 2019-current)
- PERbites blog writer and editor (spring 2018-current)
- MSU Physics Education Research Lab webmaster (fall 2018-summer 2021)
- Letters to a Pre-Scientist pen pal (fall 2019-spring 2020)
- Science and Leadership at Michigan State (SL@MS) summer camp volunteer (summer 2018, summer 2019)

NON-ACADEMIC AND POPULAR PRESS PIECES
- I know some algorithms are biased-because I created one *Scientific American*
- Eliminating the GRE *Physics Today*

TRAINING and CERTIFICATIONS
- MSU Knight Center for Environmental Journalism's Science Communication Workshop, summer 2020
- MSU Graduate School Science Writing for News Outlets, summer 2020
- Certificate in Science Communication, Center for Interdisciplinary Exploration and Research in Astrophysics, Northwestern University, December 2019

- Michigan State University Digital Presences and Public Scholarship Fellows Program Blogging Workshop, fall 2019
- Certificate in Inclusive Inquiry STEM Education, Institute for Scientist & Engineer Educators, University of California Santa Cruz, May 2019