Nicholas T. Young

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EDUCATION

- Ph.D., Physics and Computational Mathematics, Science, and Engineering, Michigan State University, expected 2021
- M.S., Physics, Michigan State University, 2020
- B.S, Physics & Astronomy, Ohio State University, 2017

EXPERIENCE

- **Graduate Fellow** (Michigan State University Hub for Innovation in Teaching and Learning, Advisor: Ellie Louson, 2020-current)
  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.
- **Graduate Research Assistant** (Michigan State University, Advisor: Marcos D. Caballero, 2017-current)
  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.
- **Summer Student, DBER REU,** (Rochester Institute of Technology, Advisor: Ben Zwickl, 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, Advisor: Andrew Heckler 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.

UNDER REVIEW JOURNAL PUBLICATIONS

1. Nicholas T. Young, Marcos D. Caballero. The Physics GRE does not help applicants "stand out" *in review*

PEER-REVIEWED JOURNAL PUBLICATIONS

1. 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
2. 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
3. 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
4. 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

1. 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
2. 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
3. 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
4. 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

1. 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

INVITED TALKS

1. Nicholas T. Young, Marcos D. Caballero. Addressing Rare Outcomes in PER Quantitative Studies. 2021 American Association of Physics Teachers Winter Meeting.
2. Nicholas T. Young, Grant Allen, John M. Aiken, Rachel Henderson, and Marcos D. Caballero. Why physics instructors choose to include computation in their courses. 2020 PICUP Capstone Conference. [Postponed, COVID]

SUPERVISED PERSONNEL

Undergraduate students supervised on research

1. Nicole Verboncoeur (Michigan State University, Spring 2020-current)
2. Nils Johannes Mikkelsen (University of Oslo, Summer 2019-current)
3. Tabitha Hudson (Michigan State University, Spring 2020-Summer 2020)

NON-ACADEMIC AND POPULAR PRESS PIECES

1. I know some algorithms are biased-because I created one *Scientific American*
2. Pandemic, international travel restrictions could mean TA shortage at MSU *Lansing State Journal*
3. Eliminating the GRE *Physics Today*

TEACHING EXPERIENCE

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

AWARDS AND FELLOWSHIPS

1. Michigan State University Hub for Innovation in Teaching and Learning Graduate Fellowship, 2020
2. Physics Education Research Conference Proceedings Notable Paper, 2019
3. Michigan State University College of Natural Science Recruiting Fellowship, 2017

TRAINING and CERTIFICATIONS

1. MSU Knight Center for Environmental Journalism's Science Communication Workshop, summer 2020
2. MSU Graduate School Science Writing for News Outlets, summer 2020
3. Certificate in Science Communication, Center for Interdisciplinary Exploration and Research in Astrophysics, Northwestern University, December 2019
4. Michigan State University Digital Presences and Public Scholarship Fellows Program Blogging Workshop, fall 2019
5. Communicating Science Conference for Graduate Students (COMSCICON-AIP) September 2019
6. Certificate in Inclusive Inquiry STEM Education, Institute for Scientist & Engineer Educators, University of California Santa Cruz, May 2019

SERVICE and VOLUNTEER WORK

1. MSU Physics Education Research Lab webmaster (fall 2018-current)
2. PERbites blog writer and editor (spring 2018-current)
3. MSU SciComm Vice President of Marketing (spring 2020-fall 2020)
4. MSU SciComm *SciComm Voices* blog writer (spring 2019-fall 2020)

5. Organizer for *Catalyst, A Science Art Exhibition* (fall 2020)
6. Letters to a Pre-Scientist pen pal (fall 2019-spring 2020)
7. Cientifico Latino Graduate School Mentorship Initiative mentor (fall 2019)
8. Science and Leadership at Michigan State (SL@MS) summer camp volunteer (summer 2018, summer 2019)