

Curriculum Vita  
Tatiana Erukhimova

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**Professional Preparation**

- M.S. in Physics with Honors, 1987, Nizhny Novgorod State University
- Ph.D. Physics, 1999, Institute of Applied Physics, Russian Academy of Sciences

**Academic Appointment History**

- 2019 - present: Instructional Professor, Department of Physics & Astronomy, TAMU
- 2016 - 2019: Instructional Associate Professor & Outreach Coordinator, Department of Physics & Astronomy, TAMU
- 2010 – 2016: Senior Lecturer & Outreach Coordinator, Department of Physics & Astronomy, TAMU
- 2006-2010: Lecturer and Outreach Coordinator, Dept. of Physics, TAMU
- 2002-2006: Assistant Research Scientist, Dept. of Atmospheric Sciences, TAMU
- 2001-2002: Postdoctoral Research Associate, Dept. of Atmospheric Sciences, TAMU
- 1998-2000: Research Scientist, Institute of Applied Physics, Russian Academy of Sciences

**Awards and Recognitions**

- University Professor for Undergraduate Teaching Excellence, 2021
- American Physical Society Fellow, 2019
- Presidential Professor for Teaching Excellence, 2017
- Distinguished Achievement University-Level Award in Outreach from the Association of Former Students, 2019
- Distinguished Achievement University-Level Award in Teaching from the Association of Former Students, 2012
- Distinguished Achievement College-Level Award in Teaching from the Association of Former Students: 2009, 2015
- TAMU Fish Camp Namesake, 2019
- Sigma Xi's Outstanding Science Communicator Award, 2014
- John E. Trott, Jr. Award in Student Recruiting, 2013
- Texas A&M University System Student Led Award for Teaching Excellence (SLATE): 2011, 2009, and 2008

## Grants to support pedagogical or curricular innovation:

- Principal Investigator, “Creating Physics Concept Videos”, TAMU, 2021, \$20,000
- Principal Investigator, “STEM Student Integration and Identity through Discipline-based Outreach Activities”, TAMU, 2020, \$5,000
- Principal Investigator, “Online Video Resource for Recitations in the Introductory Electricity & Magnetism class”, TAMU, 2018-2019, \$10,000. In the fall of 2019 I have recorded [53 videos](#) solving E&M problems. These videos were supplemental, no credit was given for watching them. 900 students took this class in the fall. The videos were viewed 27,529 times by the students after the first semester only.
- Principal Investigator, Student Success Faculty Fellow: "Early Intervention and Engagement in Freshman Physics Classes", TAMU, 2017-2018, \$10,000. I used this money to build peer-mentor communities in my PHYS 218 and 208 classes. I mentored 9 upper-level physics majors who ran peer-learning community meetings three times a week in spring and fall of 2018.
- Principal Investigator (with William Bassichis): "Calculus Based Physics Courses Enhanced with Technology", TAMU, 2016 - 2017, \$75,000 to create online modules providing extra instruction required by students having difficulty with PHYS 218 and PHYS 208. We created 90 videos: 49 videos for PHYS 218 (Mechanics) and 41 videos for PHYS 208 (E&M).
- Principal Investigator: American Physical Society (APS) grant for outreach innovation, 2015-2018, \$20,000. I mentored Texas A&M undergraduate and graduate students to create 21 videos that bring the excitement of the physics hands-on demonstrations to high-school students and general public in an entertaining way. The students wrote the scripts and starred in the videos. All videos are available at <http://realphysicslive.com/>
- Principal Investigator: Simons Foundation/Science Festival Alliance Just Add Science grant, 2015-2016, \$10,000. This grant allowed us to “meet people where they are.” I mentor student teams that bring exciting science experiences to existing events and venues where people are already gathered (e.g. First Fridays in Downtown Bryan and Texas A&M football games).
- Principal Investigator: Tier One Program grant 2012-2015: \$300,000 Title: “DEEP: Discover, Explore, and Enjoy Physics & Engineering via High Impact Educational Experiences in Aggieland and Beyond”. In this program I mentor teams of graduate and undergraduate students who design and build innovative physics experiments and demonstrations. They present them at the Physics & Engineering Festival every spring and at the Physics Shows throughout the year. The demonstrations are also used in regular physics courses to enhance the curriculum. The DEEP program enhances undergraduate and graduate students’ learning and research experiences by incorporating active learning, service-oriented learning, and teamwork activities. It builds leadership skills of the graduate students who serve as team leaders See more at the DEEP website: <http://physics.tamu.edu/outreach/deep/>
- Service-Learning Faculty Fellow for 2013: \$2,500.
- Flipping your course for 2013-2014: \$2,000. Funds were used to record 15 pre-lecture videos for PHYS 218 and 13 pre-lecture videos for PHYS 208 (with Bill Bassichis). These videos are posted on the course websites

- Mentored seven undergraduate students on physics education research projects. Five of them presented their research at the American Association of Physics Teachers National meetings.

#### **Recent research on physics education:**

- C. Rethman, J. Perry, J.P. Donaldson, D. Choi, and T. Erukhimova, Impact of informal physics programs on university student development: Creating a physicist, *Phys. Rev. Phys. Educ. Res.* 17, 020110 (2021).  
<https://journals.aps.org/prper/abstract/10.1103/PhysRevPhysEducRes.17.020110>
- M. Dew, J. Perry, L. Ford, W. Bassichis, and T. Erukhimova, Gendered performance differences in introductory physics: A study from a large land-grant university, *Phys. Rev. Phys. Educ. Res.* 17, 010106 (2021).  
<https://journals.aps.org/prper/abstract/10.1103/PhysRevPhysEducRes.17.010106>
- M. Dew, J. Perry, L. Ford, D. Nodurft, and T. Erukhimova, Student responses to changes in introductory physics learning due to COVID-19 pandemic, *The Physics Teacher*, 59(3), 162--165, Mar 2021; <https://doi.org/10.1119/5.0027816>
- Anne Wang, Jonathan Perry, Matthew Dew, Tatiana Erukhimova, Training the trainer: Professional Development for High School Physics Teachers with Low Physics Background, submitted, <https://arxiv.org/abs/2106.00816>
- A. Ozmetin, M. Dew, T. Erukhimova, and J. Perry, Does Instructor Gender Matter for Student Performance in Introductory Physics?, 2021 PERC Proceedings [Virtual Conference, August 4-5, 2021], edited by M. B. Bennett, B. W. Frank, and R. E. Vieyra, doi:[10.1119/perc.2021.pr.Ozmetin](https://doi.org/10.1119/perc.2021.pr.Ozmetin).
- J. Perry, J. P. Donaldson, and T. Erukhimova, Comparing the impact of informal physics program on undergraduate versus graduate student facilitators, 2021 PERC Proceedings [Virtual Conference, August 4-5, 2021], edited by M. B. Bennett, B. W. Frank, and R. E. Vieyra, doi:[10.1119/perc.2021.pr.Perry](https://doi.org/10.1119/perc.2021.pr.Perry).
- J. Randolph, E. Hay, C. Rethman, T. Erukhimova, J. P. Donaldson, and J. Perry, Impact of informal physics programs on female university students, 2021 PERC Proceedings [Virtual Conference, August 4-5, 2021], edited by M. B. Bennett, B. W. Frank, and R. E. Vieyra, doi:[10.1119/perc.2021.pr.Randolph](https://doi.org/10.1119/perc.2021.pr.Randolph).
- J. Perry, T. Erukhimova, and W. Bassichis, New video resource for calculus-based introductory physics, design and assessment. I. Electricity and magnetism, *American Journal of Physics* 87, 335 (2019), <https://doi.org/10.1119/1.5095140>

#### **Other professional interests:**

- Atmospheric wave dynamics, minor constituents, ozone layer
- Numerical modeling of atmospheric transport and mixing

#### **Publications:**

Textbook: Gerald R. North and Tatiana L. Erukhimova, "Atmospheric Thermodynamics. Elementary Physics and Chemistry". Cambridge University Press, 2009

Other publications: 30 papers in peer-reviewed journals and conference proceedings.

#### **Classes taught:**

- PHYS 208, 207: Electricity and Magnetism, 2007 - 2021, 100+ students per semester
- PHYS 218, 206: Mechanics, 2006 - 2021, 100+ students per semester
- PHYS 285, 485, 491, 685: directed studies and independent research, every year
- ATMO 335: Atmospheric Thermodynamics, Spring 2003 - 2005
- LEEP, Preparatory program, Summer 2008 - 2012
- Preparatory program for POSSE students, Summer 2015 – 2020

### **Outreach/Service:**

- Organizer of the [Physics and Engineering Festival](#) (every spring since 2007). Over 6000 visitors every year. The Festival is an Affiliate Festival to the USA Science & Engineering Festival and a member of the Science Festivals Alliance.
- Organizer of the [DEEP](#) program for TAMU students to enhance the learning and research experiences of undergraduate and graduate students through their hands-on extracurricular activities, peer learning in small teams, and participation in high-profile outreach activities.
- Organizer of numerous outreach programs at TAMU: [Physics Show](#), [Just Add Science](#), [RealPhysicsLive](#), Game Day Physics, etc. Performed dozens of physics shows per year at local schools and libraries, for summer camps, student societies, College of Science and University-wide outreach and recruitment events. Over 28,000 people attended the Physics Show since 2007 when it started.
- Organizer and lecturer of the Mitchell Institute Physics Enhancement Program (MIPEP) for high school physics teachers, 2012-2020. <https://mitchell.tamu.edu/outreach/mipep/>
- Chair, AAPT Committee on Science Education for the Public, 2020
- Session organizer at national AAPT meetings, 2019-2021
- Member, College of Science Dean's Faculty Advisory Council, current
- Member, Virtual Teaching Assistant Institute Project Team, summer 2020.
- Member, Texas A&M Undergraduate Student Success Initiative Taskforce, Fall 2018
- Member, Texas A&M University Teaching and Transformational Learning Technologies Committee, 2017-2018
- Member, Transformational Teaching and Learning Conference Program Committee, 2017-2019
- Course Coordinator for PHYS 206 and PHYS 207, 2017 – current
- Member, Presidential Transformational Teaching Grant Advisory Committee, 2019-current
- Member, Center for Teaching Excellence Faculty and Student Advisory Board, 2013-2015
- College of Science Dean Search Committee, 2018-2019
- Organizer, Texas Section of the AAPT Meeting, Fall 2014
- Organizer/presenter of the inaugural Fall 2014 Graduate Student Professional Development in Teaching seminar series
- Organizer of the Big Physics Day: satellite event of the USA Science and Engineering Festival, fall 2010.

### **Recent Presentations:**

1. Invited speaker: AAPT Virtual Summer Meeting 2020: "Broadening Participation in STEM through Science Cafes and Festivals."
2. Invited speaker: AAPT Winter Meeting 2020, Orlando, FL: "Student-Centered Physics Outreach at Texas A&M."
3. AAPT Summer Meeting 2019, Provo, UT: "Bringing Hands-on, Service-Learning Experience to Introductory Physics Classroom."
4. AAPT Winter Meeting 2019, Houston TX: "Texas A&M Physics Show", "Is there a gender gap in performance in Introductory Physics courses?"(by Matthew Dew), "Effectiveness of Mitchell Institute Physics Enhancement Program for Teacher Development"(by Anne Wang), "Early Intervention and Engagement in Freshman Physics Classes"(by Callie Rethman). Last three talks were presented at the Transformational Teaching and Learning Conference, May 2019. College Station, TX.
5. AAPT Summer Meeting 2018, Washington DC: "Real Physics Live".
6. Plenary speaker: 2018 TAMU Transformational Teaching and Learning Conference, April 2018. College Station, TX. "It's not business, it's personal. Teaching large classes, one student at a time."
7. Plenary speaker: 2018 Joint Spring Meeting of the Texas Sections of APS, AAPT, and Zone 13 SPS. March 2018, Stephenville, TX
8. Invited speaker: APS March Meeting 2018, Los Angeles, CA: "Physics as a Street Art".
9. AAPT Winter Meeting 2018, San Diego, CA: "Just Add Science".
10. APS March Meeting 2017, New Orleans, LA: "Physics Reality Show".
11. Invited speaker, AAPT Winter Meeting 2017, Atlanta, GA: "Engaging the Public with Festivals"; "Enhancement Program for In-Service Physics Teachers at TAMU"; "New Video Resource for Calculus-based Introductory Physics at TAMU" (presented by graduate student Jonathan Perry).
12. Texas A&M 2017 Teaching with Technology Conference (with William Bassichis and Jonathan Perry): "Freshman Physics Classroom: First Results"
13. Invited speaker, TAMU Pedagogy Forum, Fall 2016, Spring 2017
14. TEDxTAMU, April 2016: ["Physics as a Street Art"](#).
15. APS March Meeting 2016, Baltimore, Md.: "Texas A&M Physics Festival: bringing together the community, faculty, and students".
16. Invited speaker, Teacher Summit 2016, College Station, TX.
17. AAPT Winter Meeting 2016, New Orleans, LA: "Texas A&M Physics & Engineering Festival: unique learning opportunity for community and students"
18. APS March Meeting 2015, San Antonio, TX: "Mitchell Institute Physics Enhancement Program (MIPEP)".
19. APS/AAPT Texas 2014 Fall Meeting, College Station, TX: "High Impact Hands-on Educational program for Physics & Engineering Students at Texas A&M"
20. APS March Meeting 2014, Denver, Colorado: "DEEP: Discover, Explore, and Enjoy Physics & Engineering via High Impact Educational Experiences at Texas A&M and Beyond"
21. Invited speaker, International Public Science Events Conference, Chicago, Ohio, February 12-13, 2014: "Creating High-Energy K-12 Outreach Teams with University Students"
22. Plenary speaker, Texas A&M Center of Teaching Excellence Fall 2013 and Fall 2012 TA Training Meetings: "Teaching undergraduates: surviving or thriving?"

23. Keynote speaker, Fall Induction of Kappa Delta Pi Education Honor Society, November 17, 2013, TAMU: "You're educators. You're born to make a difference".
24. Invited speaker, International Public Science Events Conference, Columbus, Ohio, October 10-11, 2012: "Off the Bench and Out of the Field: Scientists in Outreach"
25. Invited speaker, Teacher Summit 2012, College Station, TX.

**Membership in professional societies**

- American Physical Society, member
- American Geophysical Union, member
- American Association of Physics Teachers, member
- American Association for Advancement of Science (AAAS), member
- The Honor Society of Phi Kappa Phi, member