

University of Massachusetts, Amherst
Department of Physics
Hasbrouck Lab 133
666 N. Pleasant St.
Amherst, Massachusetts 01002
☎ +1 520 331-3268
✉ toggerson@physics.umass.edu
<http://brokk.toggerson.com>

Brokk Toggerson

Education

- 2008-2012 **Ph.D.**, *Department of Physics*, University of California, Irvine, Irvine, California.
Advisor: Anyes Taffard
- 2007-2008 **M.S.**, *Department of Physics*, University of California, Irvine, Irvine, California.
- 2002-2006 **B.S.**, *Department of Physics and Honors College, Cum Laude*, University of Arizona, Tucson, Arizona.

Professional Appointments

- Sept 2015 - **Lecturer**, *University of Massachusetts Amherst*, Physics Department.
Present
- Jan 2013 - **Lecturer**, *University of Arizona*, Physics Department.
May 2015

Summary of Courses Taught

Summarizing those courses I have taught. More details on which semesters, how many students, and significant changes can be found on my website: <http://brokk.toggerson.com>

University of Massachusetts, Amherst

- Physics 132 **Introductory Physics for Life-Science Students II**, *What is an Electron? What is Light?*, Spring 2018, Spring 2019, Spring 2020, Fall 2020, Spring 2021, Fall 2021, One to two sections of 300.
Taught using a modified team-based learning pedagogy adapted to a large lecture-hall environment. Transitioned to remote in Spring 2020, and taught completely remotely in Fall 2020 and Spring 2021. Plan is to return to in-person instruction in Fall 2021.
- Physics 132 **Introductory Physics for Life-Science Students II Lab**, *Understanding Data*, Began taking over during Fall 2020, Spring 2021, 23 sections of 27.
Created new content for a remote lab experience focused on understanding the fundamentals of measurement and uncertainty propagation. Supervise the TAs who run the sections.

- Physics 691G **Physics Graduate Professional Development Seminar**, *Using Evidence-Based Teaching as a Lens for Professional Development*, Fall 2017, Fall 2018, Fall 2020, Fall 2021, All first-year physics graduate students (approximately 15 students).
Using TA-training as a vehicle for constructing positive graduate-student self-identity and professional development skills. Taught remotely in Fall 2020.
- Physics 381 **Junior-Year Writing in Physics**, *Physicists write a lot! Learning to communicate effectively to a large variety of audiences.*, Fall 2021, One section of 24 students.
Junior-year writing is a required course for all majors at University of Massachusetts, Amherst. Course focuses on the many types of writing and audiences encountered by physicists. The course also helps students find and apply for internships and research experiences for undergraduates (REUs).
- Physics 131 **Introductory Physics for Life Science Students I**, *Forces, Energy, Entropy*, Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2018, Two to three sections of 100 students.
Taught following a team-based learning pedagogy in a studio style classroom.
- Physics 390T/361 **Introduction to Principles of Active Learning in Physics Education**, Fall 2016, Spring 2018, Typically about 12 students.
Theoretical and practical experience in teaching for those physics majors interested in pursuing teaching-based careers.
- Physics 197SC **Particle Physics Program**, *Commonwealth Honors College Summer College*, Summer 2016, Summer 2019, Typically about 10 students.
A two-week program for talented high school students introducing them to the principles of particle physics and completing analyses using real data events from the CMS experiment at CERN.
- University of Arizona
- Physics 331 **Electrodynamics I**, *Upper-division first-semester electrodynamics*, Spring 2015, One section of 23 physics majors.
The first in a two-semester sequence taught out of Griffiths Introduction to Electrodynamics 4th ed. chapters 1-7. Taught based upon a course developed through research done at University of Colorado, Boulder.
- Physics 241 **Calculus-Based Introduction to Electricity and Magnetism**, *A second-year course for engineering majors*, Spring 2015, Summer 2014, Fall 2013, Summer 2013, One section of approximately 250 students..
Final course in a three-semester sequence for engineering majors. Vector calculus as co-requisite. Taught out of Sears and Zemansky's University Physics with Modern Physics, 13th ed.

- Physics 102 **Algebra-Based Introduction to Mechanics, Fluids, Wave Motion, and Thermodynamics**, *For second- and third-year life-science majors*, Fall 2014, Oversaw three sections of 150 students each..
Course sessions were taught by graduate teaching assistants. Produced lecture materials, YouTube videos, homework assignments and exams for partially flipped classroom which involves weekly in-class problem solving sessions using a problem solving framework based upon the work of Heller & Heller. First experimentation with studio-style classrooms. Beginning of exploration into physics for life science students (IPLS).
- Physics 162H **Calculus-Based Introduction to Thermodynamics, Wave Motion, and Optics**, *For second-year physics majors and students in the Honor's College*, Fall 2014, Fall 2013, One section of about 27 students..
Made into two half-semester courses: one on waves and optics and the other on thermodynamics
- Physics 103 **Algebra-Based Introduction to Electromagnetism, Optics, and Modern Physics**, *For second- and third-year life-science majors*, Spring 2014, One section of about 300 students.
Approximately 300 predominately life-science majors. Increased emphasis on nuclear physics after soliciting feedback from life-science departments. Used as a test-bed for evidence-based teaching techniques developed in American Association of Universities STEM Faculty Learning Community.
- Physics 142 **Calculus-Based Introduction to Thermodynamics, Wave Motion, and Optics**, *A three-credit version of 162H for engineering majors*, Spring 2014, One section of about 100 students.
- Physics 261H **Calculus-Based Introduction to Electricity and Magnetism**, *For physics majors and students in the Honor's College*, Spring 2013, One section of 27 students.
A survey of Maxwell's equations and DC circuits with vector calculus as a co-requisite.
- Physics 141 **Calculus-Based Introduction to Mechanics**, *First required physics course for engineering majors*, Spring 2013, One section of 250 students.
Taught in a traditional lecture format.

Students Advised

- Spring 2021 **David Frykenberg**, *Honors Independent Study: Investigating the impact on classroom equity of instructor's invitational prompts for questions*, University of Massachusetts Amherst, Undergraduate, class of 2022.
- Fall 2020 **Aidan Philbin**, *Developing remote labs that foster experimental design and data analysis skills for Physics 132.*, University of Massachusetts Amherst, Undergraduate, class of 2021.
- Spring 2020 **Cooper Wagner**, *Using natural language processing to understand student survey results about interdisciplinary connections*, University of Massachusetts Amherst, PhD student.
- Spring 2019 -
Spring 2020 **Samyukta Krishnamurthy**, *Using logarithmic regression to measure the power of self-efficacy to predict student success*, University of Massachusetts Amherst, PhD student.

- Summer 2018 - Spring 2020 **Emily Hansen**, *Analysis of student self-efficacy data from the Fall 2017 and 2018 semesters and development of the Physics 132 textbook*, University of Massachusetts Amherst, Undergraduate, class of 2020.
- Fall 2018 **Sara Feyzbakhsh**, *Further refinement of a one-credit physics graduate TA training program, and development of a workshop to facilitate other departments' creation of TA training programs*, University of Massachusetts Amherst, PhD student.
- Summer 2017 - Fall 2018 **Jake Shechter**, *Development and refinement of a one-credit physics graduate TA training program, and development of a workshop to facilitate other departments' creation of TA training programs*, University of Massachusetts Amherst, PhD, Spring 2020.
- Summer 2017 **David Nguyen**, *Conversion of P131 Materials into a free-to-use textbook*, University of Massachusetts Amherst, M.Ed. student.
- Summer 2016 - Fall 2016 **Chasya Church**, *Development of free-to-student course materials and the analysis of student performance data for P131*, University of Massachusetts Amherst, Undergraduate, class of 2017.

Awards

- Fall 2016, 2017, 2018, 2020 **Distinguished Teaching Award Nominee**, *University of Massachusetts, Amherst*, Campus-wide, Nominated by students for exceptional teaching.
On parental leave fall 2019.
- Fall 2018, 2019, 2020 **Manning Prize for Excellence in Teaching Nominee**, *University of Massachusetts, Amherst*, Physics Department Nominee.
- Spring 2020 **Outstanding Teaching Award Nominee**, *University of Massachusetts, Amherst*, College of Natural Sciences, Physics Department Nominee.
- September 2017 **UMass-Amherst Campus "Of the Month" Award**, *University of Massachusetts, Amherst*, National Residence Hall Honorary.
Awarded for passion for teaching and supporting student mental health.
- Spring 2015 **Award for Exceptional Undergraduate Teaching**, *University of Arizona*, Physics Department.
Selected by students and faculty for distinguished undergraduate teaching.
- Fall 2014 **Inaugural Recipient of Undergraduate STEM Teaching Excellence Award**, *University of Arizona*, AAU STEM Education Initiative, \$1000.
Campus-wide award given each semester to acknowledge STEM faculty who have implemented active learning instructional strategies.
- Spring 2014 **Award for Exceptional Undergraduate Teaching**, *University of Arizona*, Physics Department.
Selected by students and faculty for distinguished undergraduate teaching.
- Fall 2013 **Apple Polishers Award**, *Chi Omega Sorority*, University of Arizona Chapter.
Recognition of excellent teaching and mentoring.

Work Supporting Adoption of Research-Based Teaching

- Spring 2016 - Present **Blog Administrator and Contributor**, *Physics Education Group Blog*, University of Massachusetts Amherst, <https://physedgroup.umasscreate.net/blog/>. Frequent poster on issues regarding teaching with a particular emphasis on using technology and open access courses to promote equity in large courses. Several additions to help with the transition to remote learning in response to the COVID-19 pandemic.
- June 2021 **Contributor**, *Association of College and University Educators*, New York, New York, [Microcredential course in Inclusive Teaching and Equitable Learning](#).
Contributed [a short video on Intentionally Creating Diverse Teams](#).
- Spring 2020 - Present **Exemplar Inclusive Syllabus**, *Center for Teaching & Learning*, University of Massachusetts Amherst, Amherst, MA.
[My Spring 2020 syllabus, and its adjustments for remote instruction](#), are displayed as the example of an inclusive syllabus at UMass Amherst.
- May 2021 **Faculty Success Spotlight**, *Center for Teaching & Learning*, University of Massachusetts Amherst, Amherst, MA.
[Wrote a webpage and made a video](#) on effective activities for the last day of class: activities that encourage reflection and synthesis
- February 2020 **Invited Panelist**, *American Society for Biochemistry and Molecular Biology*, Northeast Regional Catalyst Conversations, Amherst, MA.
Spoke to interested faculty on the applications of open education resources, including 3-D prints as a panelist and as a small-group facilitator.
- October 2019 **Invited Speaker to Legislators**, *Open Educational Resources Legislative Event*, W.E.B. du Bois Library, Amherst, MA.
Spoke with state and federal representatives from our region on how open education resources can promote economic equity in Massachusetts public higher education.
- March 2019 **Developing a GTA/GTO Training Program Workshop**, *Diversity Lunch*, Institute for Teaching Excellence and Faculty Development, University of Massachusetts Amherst, Amherst MA.
Ran a workshop on developing graduate TA/TO training programs for representatives from departments across campus with two physics Ph.D. students, J. Shechter and S. Feyzbakhsh. We spoke on the process, the importance of graduate student involvement, and the challenges we encountered in physics.
- March 2019 **Building a Course: A Research-Based Overview Workshop**, *Teaching Lunch*, Physics Department, University of Massachusetts Amherst, Amherst, MA.
Shared what I had learned as a Student Centered Teaching and Learning Fellow as well as a Teaching for Inclusion, Diversity, and Equity Ambassador to other faculty in the physics department via a workshop to build a course using the principles of backward design.
- 2007-2010 **Video recorded lecture used as demonstration of effective teaching**, *Physics Department*, University of California, Irvine, Irvine, CA.
Used in *Seminar for Teaching Physics* course required for all departmental teaching assistants.

Professional Development

- June 2021 - Present **Caregiving Fathers of Young Children Mutual Mentoring Group Co-Founder**, *Office of Faculty Development*, University of Massachusetts Amherst, Amherst, MA.
A mutual mentoring group centered on the challenges of new-sih fathers in academia particularly in light of the COVID-19 pandemic.
- April 2018 - Present **Introductory Integrated Life Science Education Mutual Mentoring Group Co-Founder**, *College of Natural Sciences and Center for Faculty Development*, University of Massachusetts Amherst, Amherst, MA.
A Mutual Mentoring Grant supported group to explore connections across the introductory life-science sequence including introductory biology, general chemistry, calculus for life-science students, organic chemistry, and physics for life-science students. Developing modules to promote transdisciplinary thinking. Also conducting surveys to explore student understanding of the connections across disciplines.
- October 2018 - Present **Five College Physics Education Research Lunch Co-Founder**, *Physics Departments*, Amherst, Mount Holyoke, and Smith College, and University of Massachusetts Amherst, Amherst, MA.
A network to discuss physics education literature and support physics education research in the 5-College consortium.
- May 2021 **Start Your Summer: Resilient Faculty, Sustainable Careers**, *Office of Faculty Development*, University of Massachusetts Amherst, Amherst, MA.
A three-day series of workshops on time management.
- Fall 2020 - Spring 2021 **ADVANCE Faculty Fellow**, *UMass ADVANCE*, University of Massachusetts Amherst, Amherst, MA.
An NSF Supported effort at UMass Amherst. Fellows partner with the ADVANCE Leadership Team as they provide the resources, recognition and relationship building necessary to help faculty collaborate successfully and feel valued and included. Fellows provide recommendations and feedback to the team about ADVANCE programming, and they liaise with their departments, and promote our efforts.
- January 2019 **Introductory Physics for Life Science Virtual Curriculum Swap Invited Participant**, *Facilitated by Chandra Turpen*, University of Maryland, College Park.
Met four times with faculty teaching introductory physics for life science to exchange curriculum and get feedback. Good opportunity to learn about what other faculty working with this population are doing.
- March 2017 **Open Classroom Days Volunteer**, *Institute for Teaching and Faculty Development*, University of Massachusetts, Amherst, Amherst, MA.
Participated in an inaugural extended version of the open classroom days. Through this process faculty open their course for visits by other faculty. Such an exchange provides an opportunity to observe how different faculty address similar instructional challenges as well as an opportunity to get feedback on one's own class.

- Fall 2017 - **Teaching for Inclusion, Equity and Diversity Ambassador**, *Institute for Teaching and Faculty Development*, University of Massachusetts, Amherst, Amherst, MA.
 Spring 2018 Explored how to enhance students' learning and academic success across cultural, social, and learning differences by adopting a strength-based, inclusive approach to teaching and learning grounded in the value of diversity. As Ambassadors, participants take what they learn from their experiences with the fellowship program and develop a project through which they will share their growing expertise and contribute to the dialogue about and practice of teaching for inclusiveness, diversity and equity at the departmental, school/college, or campus-wide levels. \$1500 stipend.
- June 2017 **Cottrell Scholars Collaborative National Graduate Teaching Assistant Workshop - Department Representative**, *Cottrell Scholars Collaborative*, Georgia Institute of Technology, Atlanta, GA.
 NSF-Funded workshop allows a small group of departmental teams to interact together with colleagues who have expertise in supporting physics and chemistry GTAs. The workshop is designed for departmental teams consisting of one "mentor/master" TA and one faculty member.
- March 2017 **Open Classroom Days Volunteer**, *Institute for Teaching and Faculty Development*, University of Massachusetts, Amherst, Amherst, MA.
 One of twenty-two faculty who volunteered to open their classrooms to visits from other faculty from across the campus in this program.
- Fall 2016 **@Innovate UMass Symposium**, *Office for Instructional Innovation*, University of Massachusetts, Amherst, Amherst, MA.
 Participated in the third symposium. Designed to put new technologies in the hands of faculty as we explore how to push the limits of the traditional classroom through instructional innovations.
- March 2016 **Open Classroom Days Pilot**, *Institute for Teaching and Faculty Development*, University of Massachusetts, Amherst, Amherst, MA.
 One of twenty faculty who volunteered to open their classrooms to visits from other faculty from across the campus in this pilot program
- Fall 2015 - **Student Centered Teaching and Learning Fellow**, *Institute of Teaching and Faculty Development*, Amherst, MA, University of Massachusetts, Amherst.
 Spring 2016 A fellowship focusing on active, collaborative, and innovative pedagogies. Fellows engage in a variety of initiatives to assist with course design, technology familiarity, and assignment development. Upon completion, fellows receive a certificate of Team-Based Learning qualification. \$1500 stipend.
- October 2014 **Collaborative Learning Space Pilot**, *American Association of Universities STEM Education Initiative*, University of Arizona, Tucson, AZ.
 Invited by the Senior Vice Provost for Academic Affairs to participate in a two-week pilot program to investigate new, studio-style classrooms for teaching large classes.
- Fall 2013 - **Faculty Learning Community**, *American Association of Universities STEM Education Initiative*, University of Arizona, Tucson, AZ.
 Spring 2015 A community for discussing readings about learning and teaching. Exploring evidence-based instructional strategies, developing teaching resources for trying new strategies, and designing teaching projects.

- Fall 2013 - **New Faculty Teaching Talks**, *American Association of Universities STEM Education Initiative*, University of Arizona, Tucson, AZ.
 Spring 2014 Attended a series of lectures on evidence based techniques for STEM education.
- Spring 2013 - **Teaching peer review pilot**, *Office of Instruction and Assessment*, University of Arizona, Tucson, AZ.
 Fall 2013 Met with experts in physics education to improve teaching quality.
- Spring 2013 - **Supplemental Instruction pilot**, *Think Tank*, University of Arizona, Tucson, AZ.
 Spring 2015 Spring 2013 was the first physics course for this program which sets up sessions run by successful undergraduates where students can receive additional small group instruction to supplement the large lecture. Responsibilities include guiding two undergraduate instructors, receiving feedback on topics with which students are having trouble, and providing feedback to the UA Think Tank on effectiveness of program for physics courses. Attempted with a 200-level physics course for the first time in fall 2013.

Grants

- Fall 2020 **MSP Research Support Fund**, *Massachusetts Society of Professors*, \$1000.
 Attendance at the AAPT Summer 2021 Meeting to present an invited talk on using biologically and chemically authentic touchstone examples.
- Summer 2020 **Physics Education Research Project Mini-Grant**, *American Physical Society*, \$4700, Co-PI with Paul Bourgeois.
 To develop authentic remote lab experiences for the Fall 2020 semester.
- Fall 2019 **MSP Flex Grant**, *Massachusetts Society of Professors*, \$500.
 Pay membership dues to the American Association of Physics Teachers.
- Fall 2018 **MSP Flex Grant**, *Massachusetts Society of Professors*, \$500.
 Pay an undergraduate to help move the Physics 132 textbook from a static pdf to an interactive web page and move the homework from Pearson's *MasteringPhysics* to *Edfinity*.
- Summer 2018 **Open Education Initiative**, *University of Massachusetts, Amherst*, W.E.B. du Bois Libraries, \$2500.
 To develop a free-to-students textbook for Physics 132.
- Spring 2018 **Mutual Mentoring Team Grant**, *Institute for Teaching Excellence and Faculty Development UMass-Amherst*, \$6000.
 To develop a mutual mentoring network to connect the, predominantly junior, faculty who are responsible for teaching the introductory sequence of courses for life-science majors. This collaboration would be truly interdisciplinary connecting faculty from biology, chemistry, physics, math, and kinesiology. The mentoring network will strive to develop a curriculum that is aligned both in content and skills, thereby helping students develop the tools of knowledge transfer and interdisciplinary thinking critical for a modern workforce. In addition, the network will also share pedagogical best practices particular to large-enrollment STEM courses.
- Fall 2017 **Professional Development Grant**, *UMass-Amherst College of Natural Sciences Lecturer's Professional Development Fund*, \$1550.
 To present our work on the development of P131 and P132 at the Summer 2018 AAPT Meeting.

- Fall 2017 **MSP Research Support Fund**, *Massachusetts Society of Professors*, \$1000.
To pay for Jake Shechter's travel to the AAPT Summer 2018 Meeting in Washington D.C. to present our work in developing a first-year graduate-student seminar on professional development and TA training.
- Fall 2017 **MSP Flex Grant**, *Massachusetts Society of Professors*, \$500.
For equipment necessary to create the needed videos to flip P132.
- Summer 2016 **MSP Flex Grant**, *Massachusetts Society of Professors*, \$500.
To assist funding an undergraduate student working on analysis of P131 results.
- Summer 2016 **Open Education Initiative**, *University of Massachusetts, Amherst*, W.E.B. du Bois Libraries, \$2500.
To develop free-to-students course materials for P131 and to assess their impact.

Service and Outreach

- Fall 2018 - Present **Teaching Evaluation Innovation Committee**, *Physics Department*, University of Massachusetts Amherst, Amherst, MA.
Physics is one of the departments participating in the NSF funded A New Approach to the Evaluation of Teaching project.
- Spring 2016 - Present **Climate Committee**, *Physics Department*, University of Massachusetts Amherst, Amherst, MA.
Committee responsible for addressing issues of diversity and inclusion within the department and developing initiatives to improve departmental climate.
- Fall 2015 - Present **Service Courses Committee**, *Physics Department*, University of Massachusetts Amherst, Amherst, MA.
Committee oversees quality of all introductory service courses and associated laboratories as well as approving major reforms
- Fall 2019 **Beta Tester**, *The Living Physics Portal*, American Association of Physics Teachers, <https://www.livingphysicsportal.org/>.
A new platform to facilitate sharing and peer evaluation of curricular materials associated with physics for life-scientists courses.
- Fall 2013 - Spring 2015 **Women in Physics Faculty Advisor**, *Physics Department*, University of Arizona, Tucson, AZ.
Organization's mission is to provide education and awareness within the department to the issues facing women and other under-represented minorities. Also engages in significant outreach activities with local public schools.
- Fall 2013 - Spring 2015 **Department Teaching Evaluation and Innovation Committee**, *Physics Department*, University of Arizona, Tucson, AZ.
Committee evaluates graduate student teaching assistants and implements new teaching evaluation of faculty procedures.

Presentations, Posters, and Workshops

Including only those related to teaching. Other presentations on supersymmetry searches with ATLAS are listed on my website: <http://brokk.toggerson.com>

- August 2021 B. Toggerson. *Centering Units on Biologically and Chemically Authentic Motivating Contexts in a Large-Enrollment IPLS-II Course*. AAPT Summer Meeting. Virtual. Invited Talk.
- May 2021 B. Toggerson. *Perusall in a Graduate Student TA-training & Professional Development Course*. Perusall Exchange. Virtual. Contributed Talk.
- July 2020 B. Toggerson. *Adapting IPLS Materials for Large Enrollment, Algebra-Based, Studio Courses*. AAPT Summer Meeting. Virtual. Invited Talk.
- July 2020 E. Hansen, B. Toggerson. *Ensuring Student Preparation Using Pressbooks and the Edfinity Homework System*. AAPT Summer Meeting. Virtual. Contributed Talk.
- July 2020 B. Zylich, A. Viola, B. Toggerson, L. Al-Hariri and A. Lan. *Exploring Automated Question Answering Methods for Teaching Assistance AIED 2020*. Virtual. Contributed Talk.
- July 2018 B. Toggerson. *Exposing Physics Majors to Education while Supporting Studio Style Courses*. AAPT Summer Meeting. Washington, DC. Contributed talk.
- July 2018 J. Shechter, B. Toggerson. *Development and Implementation of a Graduate Teaching Assistant Training Program*. AAPT Summer Meeting. Washington, DC. Contributed talk.
- July 2018 B. Toggerson. *Transitioning a 300-person IPLS Course to Team-Based Learning, Physics 132: What is Light? What is an Electron?* AAPT Summer Meeting. Washington, DC. Contributed poster.
- July 2018 B. Toggerson, H. Hatch, P. Bourgeois, C. Ertl, C. Church. *Application of Team-Based Learning to a First-Semester IPLS Course, Physics 131: Forces, Energy, Entropy*. AAPT Summer Meeting. Washington, DC. Contributed poster.
- May 2018 B. Toggerson. *A Survey of Various Teaching Technology Tools for Active Learning in Large Enrollment Courses*. @Innovate UMass Symposium. Amherst, MA. Invited talk
- January 2018 B. Toggerson. *Teaching Technologies Used in P13X*. @Innovate UMass Symposium. Amherst, MA. Invited talk.
- July 2017 B. Toggerson, H. Hatch, P. Bourgeois, C. Ertl, C. Church. *Application of Team-Based Learning to a First-Semester IPLS Course*. AAPT Summer Meeting. Cincinnati, OH. Contributed talk.
- February 2017 B. Toggerson. *Using Twitter for Formative Assessment in Large Lecture Courses*. @Innovate UMass Symposium. Amherst, MA. Invited talk.
- October 2016 B. Toggerson, H. Hatch, P. Bourgeois, C. Ertl. *Physics 131 - Reflections on Transition to Team-Based Learning*. University of Massachusetts - Amherst STEM-Ed Institute. Amherst, MA. Invited talk.

Publications

This is a partial list, including only papers with significant contributions.

A complete list of publications with the ATLAS collaboration is available [here](#)

Books

B. Toggerson, A. Philbin. *Physics 132 Lab Manual: Understanding Data*. University of Massachusetts Amherst Libraries, December 2020.

B. Toggerson, E. Hansen. *Physics 132: What is an Electron? What is Light?* University of Massachusetts Amherst Libraries, January 2020.

B. Toggerson, D. Nguyen. *Physics 131: Forces, Energy Entropy*. University of Massachusetts Amherst Libraries, August 2017.

Journal Articles

B. Toggerson. In service of equity: 3-D printed models in university introductory physics. *Accepted to The Physics Teacher*, To appear early 2022.

B. Toggerson et al. Positive impacts on student self-efficacy from an introductory physics for life science course using the team-based learning pedagogy. *In submission to Physical Review - Physics Education Research*, Pre-print arXiv:2001.07277v1 [physics.ed-ph].

The ATLAS Collaboration. Search for direct slepton and gaugino production in final states with two leptons and missing transverse momentum with the ATLAS detector in pp collisions at $\sqrt{s} = 7$ TeV. *Phys.Lett.*, B718:879–901, 2013.

The ATLAS Collaboration. Searches for supersymmetry with the ATLAS detector using final states with two leptons and missing transverse momentum in proton–proton collisions. *Physics Letters B*, 709(3):137 – 157, 2012.

The ATLAS Collaboration. Search for supersymmetric particles in events with lepton pairs and large missing transverse momentum in $\sqrt{s} = 7$ TeV proton-proton collisions with the ATLAS experiment. *EPJC*, 71:1682, 2011.

The ATLAS Collaboration. Measurement of the top quark-pair production cross section with ATLAS in pp collisions at $\sqrt{s} = 7$ TeV. *EPJC*, 71:1577, 2011.

T. Argyropoulos et al. Cathode Strip Chambers in ATLAS: Installation, Commissioning and in Situ Performance. *IEEE Transactions on Nuclear Science*, 56(3), June 2011.

B. Toggerson et al. Onset of space charge effects in liquid argon ionization chambers. *Nuclear Inst. and Methods A*, 608(2), September 2009.

Dissertations

Brokk Toggerson. *Search for Direct Gaugino Production Decaying to Two Leptons and Missing Transverse Momentum at ATLAS with $\sqrt{s} = 7$ TeV*. PhD thesis, University of California, Irvine, 2012.