

CURRICULUM VITAE

A. **BIOGRAPHICAL INFORMATION**

1. **PERSONAL**

- **Name:** Jason John Bradley Harlow
- **University Address:** Department of Physics, 60 St. George St. Suite 129E, Toronto ON M5S1A7
- **Office Phone:** 1-416-978-5493

2. **DEGREES**

- Ph.D. 2000
Department of Astronomy and Astrophysics, The Pennsylvania State University
Thesis Title: "The Faint End of the Stellar Luminosity Function"
Supervisor's name: Donald Schneider
- B.Sc. 1993
Department of Physics, University of Toronto
Thesis Title: "Radial Velocities of M Dwarfs"
Supervisor's name: Karl Kamper

3. **EMPLOYMENT**

- **Department of Physics, University of Toronto**
Associate Professor, Teaching Stream, 2016 - present
Associate Chair, Undergraduate Studies, 2016 - 2019
Senior Lecturer, 2010 - 2015
Lecturer, 2005 – 2010
Sessional Instructor, 2004
- **Department of Physics, University of the Pacific**
Assistant Professor, 1999 - 2004
- **Department of Astronomy and Astrophysics, The Pennsylvania State University**
Graduate Research and Teaching Assistant, 1994 - 2000
- **David Dunlap Observatory, University of Toronto**
Telescope Operator, 1993 - 1994
- **Department of Astronomy and Astrophysics, University of Toronto**
Undergraduate Research Assistant, 1992 - 1993

4. HONOURS

The Royal Astronomical Society Gold Medal, University of Toronto (1993)

5. PROFESSIONAL AFFILIATIONS AND ACTIVITIES

American Association of Physics Teachers (2005 – present)

Canadian Association of Physicists (2016 – present)

B. ACADEMIC HISTORY**6. i. RESEARCH ENDEAVOURS**

- Physics Education Research, Best Teaching Methods
- Low Mass Stars, the Faint End of the Stellar Luminosity Function
- Astronomical Instrumentation, Fibre Optics

ii. RESEARCH AWARDS

- NSERC PromoScience for Let's Talk Science, Jan.2021, for 3 years, total \$49,800
- University of Toronto Faculty of Arts and Science Advanced Teaching and Learning in Arts & Science (ATLAS) June 2018, for 1 year, total \$5,749.74
- University of Toronto Stepping UP Student Experience Fund (SEF), Apr.2007, for 2 years, total \$1,160,000, co-investigator with Michael Luke, David Bailey and David Harrison
- University of Toronto Instructional Technology Courseware Development Fund (ITCDF) Apr.2007, 4 months, total \$11,700, co-investigator with Michael Luke, David Bailey and David Harrison
- University of Toronto Stepping UP Student Experience Fund (SEF) Jan.2008 for 6 months, \$90,200, co-investigator with Michael Luke, David Bailey and David Harrison

C. SCHOLARLY, CREATIVE AND PROFESSIONAL WORK**7. Refereed publications****i. Books Authored**

- *"Physics of Music"*, by Jason Harlow and Mark Kazakevich, self-published ©2021, 12 Chapters, 190 pages, Available for Free Download from Perusall by creating a student account, **Student course code: HARLOW-9PNGP** , <https://app.perusall.com/courses/physics-of-music/>

ii. Articles

- Marshall, J., Fenton, L.K. and **Harlow, J.J.B.** "Limitations of applying grain weight similitude in aeolian studies with NASA Mars Wind Tunnel" 2021, *Journal of Aeolian Research* 53, 100732

- **Harlow, J.J.B.**, Harrison, D.M., Justason, A., Meyertholen, A. and Wilson, B. "Personality types and student performance in an introductory physics course" 2017, *Phys. Rev. Phys. Educ. Res.* 13, 020124
- **Harlow, J.J.B.**, Harrison, D.M and Meyertholen, A. "Effective student teams for collaborative learning in an introductory university physics course" 2016, *Phys. Rev. Phys. Educ. Res.* 12, 010138
- French, M., Taverna, F.A., Neumann, M., Paulo Kushnir, L., **Harlow, J.J.B.**, Harrison, D.M. and Serbanescu, R.M. "Textbook Use in the Sciences and Its Relation to Course Performance" 2015, *College Teaching*, v.63, p.171
- **Harlow, J.J.B.**, Harrison, D.M. and Honig, E. "Compressed-format compared to regular-format in a first-year university physics course" 2015, *American Journal of Physics* v.83, p.272
- **Harlow, J.J.B.**, Landau, R. and Bailey, D.C. "The Effects of Physics Breadth Courses on Student Attitudes About Science" 2014, *Physics in Canada / La Physique au Canada Theme: Physics Education* v.70.2, p.69
- **Harlow, J.J.B.**, Harrison, D.M. and Meyertholen, A. "Correlating student interest and high school preparation with learning and performance in an introductory university physics course" 2014, *Physical Review Special Topics Physics Education Research*, v.10, p.010112
- **Jason Harlow**, Lena Kushnir, Charly Bank, Scott Browning, Jim Clarke, David Harrison, Karen Ing, Cecilia Kutas and Ruxandra Serbanescu "What's all the clicking about? A study of Classroom Response System use at the University of Toronto" 2009, *Collected Essays on Learning and Teaching (CELT)*, vol. 2. (10 pages)
- Melody Neumann, Charly Bank, Scott Browning, Jim Clarke, **Jason Harlow**, David Harrison, Karen Ing, Lena Kushnir, Cecilia Kutas, John Pitre, Ruxandra Serbanescu, Marty Wall, and Ron Wilson "Serial Team Teaching and the Evolving Scholarship of Learning: Students' Perspective" 2008, *Collected Essays on Learning and Teaching (CELT)*, vol. 1. (8 pages)
- Wade, R.A., **Harlow, J.J.B.** and Ciardullo, R.B. "Biases in Expansion Distances of Novae Arising from the Prolate Geometry of Nova Shells" 2000, *Publications of the Astronomical Society of the Pacific*, v.112, p.614 (11 pages)
- Orosz, J.A., Wade, R.A., **Harlow, J.J.B.**, Thorstensen, J.R., Taylor, C.J. and Eracleous, M. "The Post-Common Envelope and Pre-cataclysmic Binary PG 1224+309" 1999, *Astronomical Journal*, v.117, p.1598 (11 pages)
- Percy, J.R., **Harlow, J.J.B.**, Hayhoe, K.A.S., Ivans, I.I., Lister, M., Plume, R., Rosebery, T., Thompson, S. and Yeung, D. "Photometric Monitoring of Bright Be Stars. III. 1988-89 and 1992-95" 1997, *Publications of the Astronomical Society of the Pacific*, v.109, p.1215 (6 pages)
- Orosz, J.A., Wade, R.A. and **Harlow, J.J.B.** "Variable Radial Velocities Among Composite-Spectrum Binaries in the PG Catalog" 1997, *Astronomical Journal*, v.114, p.317 (9 pages)
- **Harlow, J.J.B.** "The M Dwarf Double Lined Spectroscopic Binary Gliese 372" 1996, *Astronomical Journal*, v.112, p.2222 (5 pages)

- Upgren, A.R., and **Harlow, J.J.B.** “Space Motions of Low-Mass Stars. II. Radial Velocities” 1996, *Publications of the Astronomical Society of the Pacific*, v.108, p.64 (4 pages)

iv. Books edited

- “*University Physics 14th Edition*” by Hugh D. Young and Roger A. Freedman, ©2019 Pearson Addison-Wesley. I accuracy-checked the entire book.
- “*Physics for the Life Sciences*” 3rd Edition by Martin Zinke-Allmang, Ken Sills, Reza Nejat and Eduardo Galiano-Riveros ©2016 by Nelson. I reviewed five chapters.
- “*Principles & Practice of Physics*” by Eric Mazur ©2014 by Addison-Wesley. I edited the online homework assignments in MasteringPhysics
- “*Physics for Scientists and Engineers: 3rd Edition*” by Randall D. Knight, ©2012 Addison Wesley. I reviewed 10 chapters.
- Ontario High School Textbook: “*Physics 11*” by Maurice DiGiuseppe et al, ©2011 Nelson Education Ltd. I was an accuracy-checker.
- “*University Physics 13th Edition*” by Hugh D. Young and Roger A. Freedman, ©2011 Pearson Addison-Wesley. I accuracy-checked the entire book.
- Ontario Grade 11 Physics Curriculum “*Unit A: Kinematics*” and “*Unit B: Forces*” ©2010 Pearson Edvantage Press. Reviewed and accuracy-checked the new edition.
- “*College Physics: A Strategic Approach 2nd Edition*” by Randall D. Knight, Brian Jones and Stuart Field, ©2010 Pearson Addison-Wesley. Reviewed 8 chapters and accuracy-checked the entire book.
- “*Physics for Scientists and Engineers: A Strategic Approach 2nd Edition*” by Randall D. Knight, ©2007 Addison Wesley. I created a complete set of lecture outlines in Powerpoint, and reviewed and edited the online MasteringPhysics tutorials.
- “*Physics for Scientists and Engineers 6th Edition*” by Paul A. Tipler, Gene Mosca, ©2007 W. H. Freeman. – I reviewed and corrected a complete set of Clicker Questions.

8. Non-Refereed Publications

- Bailey, D.C., **Harlow, J.J.B.** and Krasnopolskaia, N.N. “The Advanced Physics Lab at the University of Toronto” 2009, Topical Conference on Advanced Laboratories, Session II S14, July 23-25, 2009 University of Michigan www.advlabs.aapt.org
- Bailey, D.C., **Harlow, J.J.B.**, Krasnopolskaia, N.N. and Morris, S.W. “A Knots Experiment” 2009, Topical Conference on Advanced Laboratories, Session IX L02, July 23-25, 2009 University of Michigan www.advlabs.aapt.org
- Sperauskas, J., Boyle, R.P., **Harlow, J.J.B.**, Jahreiss, H. and Upgren, A.R. “An Ongoing Program of Radial Velocities of Nearby Stars” 2004, *Bulletin of the American Astronomical Society*, 203, 43.02
- **Harlow, J.J.B.** “The Faint End of the Stellar Luminosity Function” 2000, *Bulletin of the American Astronomical Society*, 197, 127.03

- **Harlow, J.J.B.**, Wade, R.A. and Ciardullo, R.B. “Implications of the Assumption of Spherical Symmetry on Nova Expansion Parallaxes” 1999, Bulletin of the American Astronomical Society, 195, 36.03
 - **Harlow, J.J.B.**, Pavlov, G.G. and Halpern, J.P. “HST/NICMOS observations of PSR 0656+14 and Geminga” 1999, Bulletin of the American Astronomical Society, 193, 41.07
 - **Harlow, J.J.B.**, Schneider, D.P. “Limits on the Stellar Luminosity Function as Determined from a CCD Transit Survey” 1998 Bulletin of the American Astronomical Society, 191, 108.04
 - **Harlow, J.J.B.**, Ramsey, L. W., Andersen, D.R., Fleig, J.D., Rhoads, B.T. and Engel, L.G. “The Upgraded Fiber Optic Echelle Spectrograph” 1997 Bulletin of the American Astronomical Society, 189, 42.07
 - **Harlow, J.J.B.** “The Radial Velocity Curves of the Two Components of the Spectroscopic Binary Gliese 372, a Double M-Dwarf System” 1996 Bulletin of the American Astronomical Society, 188, 60.06
10. Conference & Symposia Presentations
- Carolyn Sealfon and **Jason Harlow**, “Classifying Students’ Free Responses in Large Classes”, Physics Education Research Conference 2018, organized by the American Association of Physics Teachers, Washington DC, Aug.1-2, 2018, Poster Session II-B79
 - **Jason Harlow**, “Personality Types and Student Performance in an Introductory Physics Course”, International Conference on Improving University Teaching (IUT), Tel Aviv, Israel, July 19, 2017
 - **Jason Harlow**, “Personality Types and Student Performance in an Introductory Physics Course”, Canadian Association of Physicists Congress (CAP), Queen’s University, Kingston ON, May 30, 2017
 - **Jason Harlow**, “Clickers in the classroom: best practices, common pitfalls, and a test of efficacy”, Large-Class Science & Math Teaching Symposium, Department of Chemistry, University of Toronto, Feb. 19, 2016
 - **Jason Harlow** and Andrew Meyertholen “Fun with Waves and Sound” 2014, Ontario Association of Physics Teachers 36th Annual Conference Toronto May 8-10 2014, Session D.20
 - **Jason Harlow** “Grade 10: Optics” 2012, Ontario Association of Physics Teachers 34th Annual Conference Waterloo April 26-28 2012, Session A.05
 - **Jason Harlow** “Ray Optics” 2011, Ontario Association of Physics Teachers 33rd Annual Conference Hamilton May 12-14 2011, Session C.11
 - **Jason Harlow**, Heather Andres, Alireza Mashayekhi, Eric Lee and Kemp Plumb, “Forces, Motion & the Scientific Method” and “Electricity, Magnetism and Geometric Optics” 2010 Ontario Association of Physics Teachers 32nd Annual Conference Toronto April 29-May 1 2010, Sessions B.02, C.07, D.12, E.17, E.20, F.23 and F.26 [I also co-hosted this conference.]
 - **Jason Harlow**, David Harrison, Tony Key, “Engaging a Class of a Thousand Students” 2005 Teaching Large Classes: Challenges and Opportunities, Wilfrid Laurier University and Institute for the Advancement of Teaching in Higher Education May 18, 2005.

- Wade, R.A., **Harlow, J.J.B.** and Orosz, J.A. “Variable Radial Velocities Among the Ferguson-Green-Liebert Hot Subdwarf Composites in the PG Catalog” 1996, Third Faint Blue Stars Conference, ed. A.G.D. Philip (Schenectady: Union College), 429

11. Invited Lectures

- “Teaching Large Classes” Mar. 6, 2018, Woodsworth College Teaching in Higher Education seminar
- “Practicals: Not a Lab, Not a Tutorial” Nov. 7, 2012 Department of Astronomy and Astrophysics, University of Toronto
- “Putting Results of Physics Education Research Into Practice” Jan. 4, 2012 Physics Department, Indian Institute of Technology Delhi, India
- “Teaching Big First Year Physics: Combining Labs and Tutorials” Jan. 25, 2011 York University Physics & Astronomy Departmental Colloquium

D. LIST OF COURSES

13. i. Undergraduate courses taught
- Department of Physics, University of Toronto
 - **Physics of Music** (PHY207H1): online-only breadth course, with approximately 200 students per semester, 2018-present
 - **Introduction to Physics I** (PHY131H1): first semester of a year-long laboratory-based course suitable for life-sciences students, with approximately 800 students per semester 2009-2015, 2017-2018, 2020-present
 - **Emergence in Nature** (PHY196H1): a First-Year Foundation Seminar capped at 30 students, 2021-present
 - **Foundations of Physics I** (PHY151H1) Practicals Coordinator, our first specialist course with approximately 200 students per semester. 2013-present
 - **Foundations of Physics II** (PHY152H1) Practicals Coordinator, our second specialist course with approximately 270 students per semester. 2014-present
 - **Introduction to Physics II** (PHY132H1): second semester of a year-long laboratory-based course suitable for life-sciences students, 500-700 students in the on-semester, 50-100 students in the off-semester. 2009-2015
 - **Undergraduate Research Project** (PHY478H1) 2011 student Eric Nicholson. Title of project: “Upgrade to the Ultrafast Fibre Laser: GRENOUILLE”. 2015 Student: Mark Kazakevich. Title of project: “Developing Programming Teaching-Tools for in a First-Year Physics Course”.
 - **Physics of Everyday Life** (PHY205H1), first taught by me, a one-semester lecture course designed for non-science students, 350 students per semester. 2005-2006, 2012-2014.

- **Introductory Optics** (PHY385H1), first taught by me, a one-semester introduction to the physics of light. Topics covered include: electromagnetic waves and propagation of light; the Huygens and Fermat principles; Geometrical optics and optical instruments; Interference of waves and diffraction; Polarization; Introduction to photons, lasers, and optical fibers. I developed and offered this course for the first time, which has a capacity of 30-50 students per year. 2010-2012
- **Advanced Physics Laboratory** (PHY326, PHY327, PHY426, PHY427, PHY428, PHY429), a laboratory course for 3rd and 4th year Physics and Engineering majors. I supervise students and am involved in design and development of new experiments, and both minor and major revisions of existing experiments. 2004-2007, 2010
- **First Year Physics Practicals**. I coordinated, developed and delivered tutorial and laboratory activities to Introduction to Physics I,II (PHY131/132), a course with approximately 600 students per semester and 40 teaching assistants. 2008-2010
- **First Year Physics Laboratory**: development and coordination of labs for approximately 1300 students, both summer and winter sessions. 2007-2008.
- **Thesis Course** (ESC499Y1Y) Student: Dafna Sussman, I co-supervised this student with David Harrison and Lena Paulo-Kushner; I was primary supervisor. Title of Project: "The Effect of Layout Design of Online Documents on Learning". 2006-2007.
- **Thesis Course** (ESC499Y1Y) Student: David Wong, I co-supervised this student with David Bailey; I was primary supervisor. Title of Project: "Teaching Methods and Tools for Data Analysis in the Advanced Physics Laboratory". 2005-2006.
- **Physics for the Life Sciences** (PHY138), a two-semester course with laboratories. I have been the second of four lecturers, teaching in Convocation Hall to a class of approximately 1000 students. 2004-2008.
- Department of Physics, University of the Pacific, Stockton, California, U.S.A., 1999-2004
 - **General Physics I,II** (PHYS 23,25), a two-semester course with laboratories. I had major responsibility for the design of the course and supervising the labs. 1999-2004
 - **Astronomy** (PHYS 41), a one-semester course with laboratories. I had major responsibility for the design of the course and developing, maintaining and supervising the labs. 2000-2003
 - **Optics** (PHYS 105), a one-semester course with laboratories. I had major responsibility for the design of the course and developing, maintaining and supervising the labs. 2001 -2003
 - **Astrophysics** (PHYS 141), a one-semester course. I completely designed this course in its first and second offering at the University of the Pacific. 2001-2003

- ii. Graduate courses taught
 - o **Microteaching Mini-course**, required for all 1st year physics graduate students, to give students practice giving a formal presentation in front of a small group, and discuss public speaking. 2007-2018
- iii. Theses supervised. Indicate whether primary or secondary supervisor.
 - Masters Students:
Rikki Landau, M.Sc. Report (Option I), I co-supervised this student with David Bailey. The title of her report was: "Student Background, Attitudes, and Performance in Physics Breadth Courses". 2012-2013
- iv. Other teaching and course lectures given
 - **Teaching in Higher Education** (THE500) Woodsworth College, University of Toronto. I gave 2-hour guest workshops on "Teaching in Large Classroom Settings" on Mar. 6, 2018 and Mar. 5, 2019

E. ADMINISTRATIVE POSITIONS

- 14. i. Positions held and service on committees and organizations within the University.
 - Planning Committee Member, Physics Department, 2016-present
 - Outreach Committee Member, Physics Department 2007-present
 - Inclusivity Committee Member, Physics Department, 2015-present
 - Let's Talk Science University of Toronto St. George Faculty Advisor, 2016-present
 - **Associate Chair of Undergraduate Studies**, Physics Department, 2016-2019
 - Undergraduate Curriculum Committee Chair, Physics Department, 2016-2019
 - Progress Through the Ranks Committee Member, Physics Department, 2016-2019
 - Sciences Curriculum Committee, Faculty of Arts and Science, 2016-2019
 - Outreach Committee Chair, Physics Department 2015-2016.
 - 299 Research Opportunities Program Review Committee, Faculty of Arts and Science. 2015-2016.
 - Working Group on Undergraduate Laboratory Renewal (WGUL), Physics Department, 2013-2016.
 - Physics Web Page Committee 2010-2013.
 - Physics Library Committee 2010.
 - Undergraduate Curriculum Committee Member, Physics Department 2005-2010.
 - Undergraduate Services Committee, Physics Department 2009-2010.
 - First Year Practical Development, Physics Department 2005-2008. I worked to redesign the first-year laboratories and tutorials, including renovation of the physical space.
 - High School Liaison Committee Chair, Physics Department 2006-2007.

- ii. Positions held and service on committees and organizations outside the University of scholarly and academic significance.
- University of the Pacific, Stockton, California, U.S.A., 1999-2004
 - Committee on Courses and Standards, College of the Pacific (2001 - 2004)
 - Academic Affairs Committee: Geosciences Program Review Panel (2003-2004)
 - General Education Committee (2003-2004)