Katherine Brown
Hamilton College
Physics Department
198 College Hill Road Clinton, New York 13323
kjonessm@hamilton.edu (315) 859-4585
people.hamilton.edu/kbrown

EDUCATION

Ph.D. Physics 2010
Case Western Reserve University, Cleveland, Ohio

M.S. Physics 2005
Case Western Reserve University, Cleveland, Ohio

B.S. Astrophysics and Mathematics 2002
University of New Mexico, Albuquerque, New Mexico

EMPLOYMENT

Hamilton College Physics Department, Clinton, New York
Associate Professor 2019 - Present
Assistant Professor 2014 - 2019

Oberlin College Physics and Astronomy Department, Oberlin, Ohio
Visiting Assistant Professor 2013 - 2014

Reed College Physics Department, Portland, Oregon
Visiting Assistant Professor 2012 - 2013

Washington University in Saint Louis, Saint Louis, Missouri
Postdoctoral Research Associate 2010 - 2012

AWARDS & RECOGNITION

Dean's Scholarly Achievement Early Career Award 2019
Foundational Questions Institute, Member 2017
AWIS Luise Meyer-Schutzmeister Memorial Award 2009
Phi Beta Kappa, Member 2002

PROFESSIONAL ACTIVITIES

Editorial Board, *Journal of Physics Communications*, IOP Publishing 2018-Present
External Review, Middlebury College Physics Department 2019
Visiting Scholar, University of New Mexico Physics and Astronomy Department 2017-18
Instructor, Case Western Reserve University School of Medicine Summer Medical and Dental Education Program 2014

PUBLICATIONS

Publications prior to 2015 are under my maiden name, Jones-Smith.

Katherine Brown and Harsh Mathur. "Modified Gravity as an Alternative to the Planet Nine Hypothesis", In submission at *Nature Astronomy*, 2022.

Katherine Brown, Harsh Mathur, Eileen Wilcox. "Interaction of a Point Mass and a Domain Wall in Symmetron Gravity." In preparation, 2022.

Brown, Katherine, Ashton Lowenstein, and Harsh Mathur. "Effect of forcing on vacuum radiation." *Physical Review A* 99.2 (2019): 022504.

Thompson, Foster, Katherine Brown, Harsh Mathur and Kristen McKee. "Contact interactions and Kronig-Penney models in Hermitian and symmetric quantum mechanics." *Journal of Physics A: Mathematical and Theoretical* 51.49 (2018): 495204.

Brown, Katherine, Roshan Abraham, Leo Kell and Harsh Mathur. "The radial acceleration relation and a magnetostatic analogy in quasilinear MOND." *New Journal of Physics* 20.6 (2018): 063042.

Brown, Katherine, Harsh Mathur, and Mike Verostek. "Exploring extra dimensions with scalar fields." *American Journal of Physics* 86.5 (2018): 327-337.

Ogden, Lillie, Katherine Brown, Harsh Mathur and Kevin Rovelli. "Electrostatic analogy for symmetron gravity." *Physical Review D* 96.12 (2017): 124029.

Mathur, Harsh, Katherine Brown, and Ashton Lowenstein. "An analysis of the LIGO discovery based on introductory physics." *American Journal of Physics* 85.9 (2017): 676-682.

Jones-Smith, Katherine, and Connor Wallace. "Hofstadter's Cocoon." *International Journal of Theoretical Physics* 54.1 (2015): 219-226.

Jones-Smith, Katherine, and Harsh Mathur. "Relativistic non-Hermitian quantum mechanics." *Physical Review D* 89.12 (2014): 125014.

Dasarathy, Anirudh, J.P. Isaacson, Katherine Jones-Smith, Jason Tabachnik, and Harsh Mathur. "Particle in a box in PT-symmetric quantum mechanics and an electromagnetic analog." *Physical Review A* 87.6 (2013): 062111.

Jones-Smith, Katherine. "A 'Dysonization' scheme for identifying quasi-particles using non-Hermitian quantum mechanics." *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 371.1989 (2013): 20120056.

Jones-Smith, Katherine, and Rudolph Kalveks. "Vector Models in PT Quantum Mechanics." *International Journal of Theoretical Physics* 52.7 (2013): 2187-2195.

Jones-Smith, Katherine, and Francesc Ferrer. "Detecting chameleon dark energy via an electrostatic analogy." *Physical Review Letters* 108.22 (2012): 221101.

Jones-Smith, Katherine. "Chameleon effects on small scale structure and the baryonic Jeans mass." *Physical Review D* 85.4 (2012): 043502.

Jones-Smith, Katherine, and Harsh Mathur. "Non-Hermitian quantum Hamiltonians with PT symmetry." *Physical Review A* 82.4 (2010): 042101.

Krauss, Lawrence M., Katherine Jones-Smith, Harsh Mathur and James Dent. "Probing the gravitational wave signature from cosmic phase transitions at different scales." *Physical Review D* 82.4 (2010): 044001.

Jones-Smith, Katherine, Harsh Mathur, and Tanmay Vachaspati. "Aharonov-Bohm Radiation." *Physical Review D* 81.4 (2010): 043503.

Jones-Smith, Katherine, Harsh Mathur, and Lawrence M. Krauss. "Drip paintings and fractal analysis." *Physical Review E* 79.4 (2009): 046111.

Baumann, Daniel, et al. "Probing inflation with CMB polarization." *AIP Conference Proceedings*. Vol. 1141. No. 1. American Institute of Physics, 2009.

Jones-Smith, Katherine, Lawrence M. Krauss, and Harsh Mathur. "Nearly scale invariant spectrum of gravitational radiation from global phase transitions." *Physical Review Letters* 100.13 (2008): 131302.

Krauss, Lawrence M., Katherine Jones-Smith, and Dragan Huterer. "Dark energy, a cosmological constant, and type Ia supernovae." *New Journal of Physics* 9.5 (2007): 141.

Jones-Smith, Katherine, and Harsh Mathur. "Revisiting Pollock's drip paintings." *Nature* 444.7119 (2006): E9-E10.

TALKS & CONFERENCES

Colloquium, Physics Department, Kenyon College, October 2019.

Widely Applied Math Seminar, Harvard University, February 2019.

Colloquium, Physics Department, Bryn Mawr College, October 2018.

Nuclear and Particle Astrophysics Seminar, Physics and Astronomy Department, University of New Mexico, March 2018.

Colloquium, Physics and Astronomy Department, University of New Mexico, January 2018.

Nuclear and Particle Astrophysics Seminar, Physics and Astronomy Department, University of New Mexico, November 2017.

Nuclear and Particle Astrophysics Seminar, Physics and Astronomy Department, University of New Mexico, October 2017.

Presentation, Pseudo-Hermitian Hamiltonians in Quantum Physics Conference, Bad Honnef, Germany, May 2017.

Colloquium, Physics Department, Union College, March 2017.

Pennsylvania Young Women in Physics Conference, Bucknell University, March 2017.

Lightning Talk, Science Foo Camp Conference, Googleplex, Mountain View California, July 2016.

Panelist, Conference for Undergraduate Women in Physics, Syracuse University, January 2016.

Colloquium, Physics Department, Colgate University, November 2015.

Panelist, Conference for Undergraduate Women in Physics, Yale University, January 2015.

Colloquium, Physics Department, Ithaca College, November 2014.

Seminar, Physics Department, University of Helsinki, September 2011.

Presentation, Symposium on PT-Symmetric Non-Hermitian Quantum Mechanics, Heidelberg, Germany. September, 2011.

Presentation, Cosmo 11 International Cosmology Conference, Porto, Portugal, August 2011.

Seminar, Theoretical Physics Group, California Institute of Technology, January 2010.

Seminar, Physics Department, Washington University in Saint Louis, December 2010.

Seminar, Theoretical Division , Los Alamos National Laboratory, November 2010.

Seminar, Perimeter Institute of Theoretical Physics, December 2009.

Poster, Cosmo 09 International Cosmology Conference, Geneva, Switzerland, September 2009.

Poster, Stanford Summer Institute. Stanford Linear Accelerator Center, Stanford University , August 2009.

Invited Talk, American Physical Society March Meeting, Pittsburgh, Pennsylvania. March 2009.

Presentation, Buffalo-Case-Cornell-Syracuse Workshop on Cosmology and Astro-Particle Physics, Cleveland, Ohio, December 2008.

Participant, Workshop on "CMBPol Mission Concept Study: Theory and Foreground Workshop", at Fermi National Accelerator Laboratory, June, 2008.

Invited Talk, SPIE Conference, San Jose, California, January 2008.

Colloquium, Baker-Nord Center for the Humanities, Case Western Reserve University, September 2007.

Invited Talk, Association of Physics Teachers Annual Meeting, Greensboro, North Carolina, August 2007.

Colloquium, Physics Department, Case Western Reserve University, October 2006.

MEDIA & NEWS

Diversifying the Field of Physics, Letter to the Editor, New York Times, June 2021.
Jackson Pollock Authentication Analysis, Data Skeptic Podcast, August 2014.
Nature Physics Research Highlights: Cosmic String Theory , March 2010.
Never mind the Pollock 'fractals', ScienceNews, March 2009.
Ada Lovelace Day: Katherine Jones-Smith and the Pollock Fractals, Bioephemera blog, March 2009.
Researchers End Debate Over Fractal Analysis Of Authentication Of Pollock's Art, Science Daily, November 2007.
ArtNews, National News, Fracas Over Fractals. February 2007.
Student Challenges Method for Identifying Pollock's Paintings, USA Today, December 2006.
The Case of Pollock's Fractals Focuses on Physics, New York Times, December 2006.