Dustin P. Kleckner, Ph. D.

UCMERCED

CONTACT

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EDUCATION

University of California – Santa Barbara, Santa Barbara, California USA
Ph.D., Physics, March 2010
M.A., Physics, September 2006
California Nanosystems Institute (CNSI) Fellowship, 2004 – 2006

University of Minnesota – Twin Cities, Minneapolis, Minnesota USA
B.A., Physics and Art, 2004
Graduation with Honors, Summa Cum Laude

ACADEMIC WORK EXPERIENCE

University of California – Merced, Merced, California USA
Assistant Professor **July 2015 – Present**

University of Chicago, Chicago, Illinois USA
Post-Doctoral Researcher **January 2011 – June 2015**
Kadanoff-Rice Fellow **January 2013 – January 2014**
Topic: Topology and Geometry in Fluid Dynamics and Soft Matter Physics
Advisers: William T. M. Irvine and Sidney Nagel

University of California – Santa Barbara, Santa Barbara, California USA
Graduate Student Researcher **2004 – March 2010**
Post-Doctoral Researcher **April – December 2010**
Topic: Micro-optomechanical Systems (Theory and Experiment)
Adviser: Dirk Bouwmeester

Teaching Assistant **Fall 2009**
Physics 250, Graduate Level Quantum Optics

University of Minnesota – Twin Cities, Minneapolis, Minnesota USA
Undergraduate Student Researcher **2003 – 2004**
Topic: Radio-emission from Cosmic Rays
Adviser: Michael DuVernois

Teaching Assistant **Fall 2002 – Spring 2004**
Undergraduate Physics Discussions Sections and Labs

PUBLICATIONS

"How superfluid vortex knots untie," **D. Kleckner**, L. H. Kauffman and W. T. M. Irvine, arXiv:1507.07579 [physics.flu-dyn] (2015).

"Topological mechanics of gyroscopic metamaterials," L. Nash, **D. Kleckner**, A. Read, V. Vitelli, A .M. Turner and W. T. M. Irvine, arXiv:1504.03362 [cond-mat.soft] (2015).

"Helicity conservation by flow across scales in reconnecting vortex links and knots," **D. Kleckner**, M. W. Scheeler, D. Proment, G. L. Kindlmann, and W. T. M. Irvine, *Proceedings of the National Academy of Sciences* **111**, 15350 (2014).

"The life of a vortex knot," **D. Kleckner**, M. W. Scheeler, and W. T. M. Irvine, *Physics of Fluids* **26**, 091105 (2014). [accompanying movie: arXiv 1310.3321]

"Liquid crystals: Tangled loops and knots (News and Views)," W. T. M. Irvine and **D. Kleckner**, *Nature Materials* **13**, 229 (2014).

"Creation and dynamics of knotted vortices," **D. Kleckner** and W. T. M. Irvine, *Nature Physics* **9**, 253 (2013).

"Optomechanical trampoline resonators," **D. Kleckner**, B. Pepper, E. Jeffrey, P. Sonin, S. M. Thon, and D. Bouwmeester, *Optics Express* **19**, 19708 (2011).

"Fiber-connectorized micropillar cavities," F. Haupt, S. S. R. Oemrawsingh, S. M. Thon, H. Kim, **D. Kleckner**, D. Ding, D. J. Suntrup III, P. M. Petroff, and D. Bouwmeester, *Applied Physics Letters* **97**, 131113 (2010).

"Polychromatic Photonic Quasicrystal Cavities," S. M. Thon, W. T. M. Irvine, **D. Kleckner** and D. Bouwmeester, *Physical Review Letters* **104**, 243901 (2010).

"Micro-optomechanical systems for quantum optics," **D. Kleckner**, University of California Doctoral Thesis, March 2010.

"Diffraction limited high finesse optical cavities," **D. Kleckner**, W. T. M. Irvine, S. S. R. Oemrawsingh and D. Bouwmeester, *Physical Review A* **81**, 043814 (2010).

"Creating and verifying a quantum superposition in a micro-optomechanical system," **D. Kleckner**, I. Pikovski, E. Jeffrey, L. Ament, E. Eliel, J. van den Brink and D. Douwmeester, *New Journal of Physics* **10**, 095020 (2008).

"Sub-kelvin optical cooling of a micromechanical resonator," **D. Kleckner** and D. Bouwmeester, *Nature* **444**, 75 (2006).

"High Finesse Opto-Mechanical Cavity with a Movable Thirty-Micron-Size Mirror," **D. Kleckner**, W. Marshall, M. J. A. de Dood, K. N. Dinyari, B.-J. Pors, W. T. M. Irvine, and D. Bouwmeester, *Physical Review Letters* **96**, 173901 (2006).

In the Media

Nova Online Video
Knotty Thrills **July 17, 2014**
http://www.pbs.org/wgbh/nova/physics/knotty-thrills.html

National Public Radio: Science Friday
Tying Water in a Knot **March 15, 2013**
http://www.sciencefriday.com/video/03/15/2013/tying-water-in-a-knot.html

Nature Podcast
Interview **November 2, 2006**
http://www.nature.com/nature/podcast/v444/n7115/nature-2006-11-02.html

Conferences, Talks, and Presentations

American Physical Society March Meeting 2015
Contributed Talk: "Untangling Superfluid Vortices" **March 4, 2015**

Annual Meeting of the APS Division of Fluid Dynamics 2014
Contributed Talk: "Knots and Coils in Superfluid Vortices" **November 23, 2014**

American Physical Society March Meeting 2014
Contributed Talk: "Untying the Knot: Topological Vortex Dynamics" **March 5, 2014**

Annual Meeting of the APS Division of Fluid Dynamics 2013
Contributed Talk: "The life of a vortex knot (in experiment)" **November 26, 2013**

Gallery of Fluid Motion Video: "The Life of a Vortex Knot"
(Winner of Milton van Dyke Award)

Arthur H. Compton Lecture Series (U. Chicago Enrico Fermi Institute)
Invited Guest Lecture: "Applied Topology: the Physics of Knots" **May 18, 2013**

American Physical Society March Meeting 2013
Contributed Talk: "Dynamics of Linked and Knotted Vortices" **March 19, 2013**

Isaac Newton Institute (Cambridge): Topological Dynamics in the Physical and Biological Sciences
Invited Participant **December 9-14, 2012**

Annual Meeting of the APS Division of Fluid Dynamics 2012
Contributed Talk: "Creation and Dynamics of Knotted Vortices" **November 20, 2012**

University of Chicago: Computations in Science Lectures
Invited Talk: "The life of a knotted vortex" **August 15, 2012**

The Kavli Institute for Theoretical Physics (UCSB): Knotted Fields
Workshop attendee **June 22-29, 2012**

American Physical Society March Meeting 2012
Contributed Talk: "Design and Evolution of Shaped Vortices" **February 28, 2012**

Gordon Research Conference: Soft Matter Far from Equilibrium
Participant **August 14-19, 2011**

American Physical Society March Meeting 2010
Contributed Talk: **March 16, 2010**
"Fabricating Micro-Optomechanical Systems for Quantum Optics"

American Physical Society March Meeting 2009
Contributed Talk: **March 20, 2009**
"Optical Requirements for Quantum Mechanics with Micromechanical Systems"

American Physical Society March Meeting 2008
Contributed Talk: **March 10, 2008**
"Towards Testing Quantum Mechanics with Micro-Optomechanical Systems"

The Conference on Lasers and Electro-Optics (CLEO/QELS) 2006
Contributed Talk: **May 25, 2006**
"High Quality Optical Cavity with a Tiny Mirror on an AFM Cantilever"

Other

Referee for *Physical Review Letters*, *Physical Review A/E* and *Applied Physics Letters*.

Head organizer for the University of Chicago *Computations in Science* lecture series (**June 2012 – December 2013**).

Session chair for APS Division of Fluid Dynamics Meeting 2012.