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# Robert D. Schroll

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## Research Interests

Fluid dynamics, fluid surfaces and interfaces, non-linear systems, soft condensed matter, optics, biological physics

## Education

PhD (in progress), *University of Chicago* 2003–present  
Under the supervision of Prof. Wendy W. Zhang.  
BS in Physics, BS in Math, *University of Maryland* 1999–2003  
Graduated *summa cum laude*.  
Completed Honors and Gemstone programs.

## Honors and Awards

National Science Foundation Graduate Research Fellowship 2003–2006  
University System of Maryland Regents' Scholarship 1999–2003  
Maryland Distinguished Scholar Scholarship 1999–2003  
Maryland Senior Summer Scholars Grant 2001

## Publications

Laser microfluidics: Fluid actuation by light. Jean-Pierre Delville, Mattheieu Robert de Saint Vincent, Robert D. Schroll, Hamza Chraïbi, Bruno Issenmann, Régis Wunenburger, Didier Lasseux, Wendy W. Zhang, and Etienne Brasselet. *J. Opt. A* **11**, 034015 (2009).

Bridging dielectric fluids by light: A ray optics approach. Robert D. Schroll, Etienne Brasselet, Alexis Casner, Wendy W. Zhang, and Jean-Pierre Delville. *Eur. Phys. J. E* **26**, 405 (2008).

Liquid transport due to light scattering. Robert D. Schroll, Régis Wunenburger, Alexis Casner, Wendy W. Zhang, and Jean-Pierre Delville. *Phys. Rev. Lett.* **98**, 133601 (2007).

Generalized synchronization of spatiotemporal chaos in a liquid crystal spatial light mod-

ulator. Elizabeth A. Rogers, Rita Karla, Robert D. Schroll, Atsushi Uchida, Daniel P. Lathrop, and Rajarshi Roy. *Phys. Rev. Lett.* **93**, 084101 (2004).

Si(111) step fluctuations in reflection electron microscopy at 1100°C: Anomalous step-step repulsion. Robert D. Schroll, Saul D. Cohen, Theodore L. Einstein, Jean-Jacques Métois, Hailu Gebremariam, Howard L. Richards, and Ellen D. Williams. *Appl. Surf. Sci.* **212**, 219 (2003).

Si(111) step fluctuations at high temperature: Anomalous step-step repulsion. Saul D. Cohen, Robert D. Schroll, Theodore L. Einstein, Jean-Jacques Métois, Hailu Gebremariam, Howard L. Richards, and Ellen D. Williams. *Phys. Rev. B* **66**, 115310 (2002).

## In Preparation

Solid substrate and head-on impact of viscous drops. Robert Schroll. *Thesis in preparation*.

Impact of a viscous liquid drop. Robert Schroll, Christophe Josserand, Stéphane Zaleski, and Wendy Zhang. *Submitted to PRL*.

## Presentations

Impact of a viscous drop. Wendy Zhang, Robert Schroll, Christophe Josserand, and Stéphane Zaleski. *APS March Meeting*, Pittsburgh, PA (March 2009).

Head-on collisions of viscous drops. Robert Schroll, Christophe Josserand, Stéphane Zaleski, and Wendy Zhang. *APS Division of Fluid Dynamics Annual Meeting*, San Antonio, TX (November 2008).

Drop impact dynamics. Robert Schroll, Christophe Josserand, Stéphane Zaleski, and Wendy Zhang. *Geometrical Singularities and Singluar Geometries*, Minneapolis, MN (July 2008).

Liquid flow driven by light scattering. Robert D. Schroll, Wendy W. Zhang, Alexis Casner, Régis Wunenburger, and Jean-Pierre Delville. *IMA Summer Program, Geometrical Singularities and Singluar Geometries*, Minneapolis, MN (July 2008).

Impact of a large-viscosity liquid drop: Rim dynamics. Robert Schroll, Christophe Josserand, Stéphane Zaleski, and Wendy Zhang. *APS Division of Fluid Dynamics Annual Meeting*, Salt Lake City, UT (November 2007).

Liquid transport and jetting via light scattering. Robert D. Schroll, Bruno Issenmann, Wendy W. Zhang, Alexis Casner, Jean-Pierre Delville, and Regis Wunenburger. *APS Division of Fluid Dynamics Annual Meeting*, Tampa, FL (November 2006).

Optical streaming: Flows and interface deformations driven by light scattering. Robert D. Schroll, Wendy W. Zhang, Alexis Casner, Régis Wunenburger, and Jean-Pierre Delville. *Dynamics Days*, Bethesda, MD (January 2006).

Viscous effects in drop impact. Roberto Zamora, Robert Schroll, Francois Blanchette, and Wendy Zhang. *APS Division of Fluid Dynamics Annual Meeting*, Tampa, FL (November 2006).

Flows and interface deformations driven by light scattering. Robert D. Schroll, Wendy W. Zhang, Alexis Casner, Jean-Pierre Delville, and Régis Wunenburger. *APS Division of Fluid Dynamics Annual Meeting*, Chicago, IL (November 2005).

Optical streaming: Flows and interface deformations driven by light scattering. Robert D. Schroll, Wendy W. Zhang, Alexis Casner, Régis Wunenburger, and Jean-Pierre Delville. *Focusing Stresses on Soft Interfaces Workshop*, Chicago, IL (November 2005).

Bridging by light. Robert D. Schroll and Wendy W. Zhang. *University of Chicago Brown-Bag Seminar*, Chicago, IL (September 2004).

Investigating steps on Si(111): Calculating the step stiffness parameter  $\tilde{\beta}$ . Robert D. Schroll and Theodore L. Einstein. *Thermo-2002*, College Park, MD (April 2002).

## Teaching

TA for Intermediate Mechanics, *University of Chicago* Winter, 2008  
Ran discussion and graded for class of 50.

## Service

Co-organizer of Computations in Science Seminar, *University of Chicago* 2006–2008  
Prepared schedules for visiting speakers and publicized the talks.

Presenter at *Physics with a Bang!* open house, *University of Chicago* 2007, 2008  
Briefly described my work to visiting members of the public.

Assistant at *Physics is Fun* programs, *University of Maryland* 2001–2003  
Ran demonstrations for visiting members of the public.

## Recreational Activities

University of Chicago Jazz X-tet

University of Chicago Pep Band

Intramural softball