Dustin M. Schroeder

University of Texas at Institute for Geophysics
J.J. Pickle Research Campus, Building 196
10100 Burnet Road, Austin, Texas, 78758

Phone: (440) 567 - 8343
Email: dustin.m.schroeder@utexas.edu
Website: www.dustinmschroeder.com

Education

Ph.D. **Geophysics**, *Jackson School of Geosciences*, **University of Texas at Austin** Expected 2014
Characterizing the Subglacial Hydrology of Thwaites Glacier Using Focused Airborne Radar Sounding

B.S. **Electrical Engineering** *with Departmental Honors*, **Bucknell University** 2007
Thesis: A Dielectric Rod Antenna for Ground Penetrating Radar Landmine Detection Applications

B.A. **Physics**, *Magna Cum Laude*, **Bucknell University** 2007
Minors: Mathematics and Philosophy

Appointments

University of Texas Institute for Geophysics	*Graduate Researcher*	2008 - Present
Johns Hopkins University Applied Physics Lab	*Graduate Researcher*	Spring 2012
Freescale Semiconductor	*Platform Hardware Engineer*	2007 - 2008
Bucknell University	*Undergraduate Researcher*	2003 - 2007
Cleveland Clinic Foundation Lerner Research Institute	*Undergraduate Researcher*	Summer 2005
Harvard-Smithsonian Center for Astrophysics	*Undergraduate Researcher*	Summer 2004
Parker Hannifin Corporation	*Summer Intern*	Summer 2003
Case Western Reserve University	*Undergraduate Researcher*	Summer 2002

Honors

University of Texas Institute for Geophysics, Gale White Fellowship 2012

Friar Society, *Oldest Honor Society at the University of Texas* 2010

NSF Graduate Research Fellowship 2009, 2013, 2014

University of Texas **Graduate School Recruitment Fellowship**, *Top 10% in Discipline* 2008

Bucknell University, Thelma Johns Showalter Prize, *For Greatest Promise in Public Affairs* 2007

COMAP Mathematical Contest in Modeling, Meritorious Winner 2005

Phi Beta Kappa, *Liberal Arts Honor Society*

Tau Beta Pi, *Engineering Honor Society*

Sigma Pi Sigma, *Physics Honor Society*

Research Experience

University of Texas Institute for Geophysics Austin, TX 2008 - Present
Advisor: D.D. Blankenship
Use radar sounding data to constrain the configurations and states of water beneath Thwaites Glacier, West Antarctica

Johns Hopkins University Applied Physics Lab Laurel, MD Spring 2012
Advisor: R.K. Raney
Developed theoretical framework to measure the scattering functions of subglacial interfaces using focused radar sounding data

Bucknell University, Electrical Engineering Department Lewisburg, PA 2006 - 2007
Advisor: D.F. Kelley
Optimized design of a dielectric rod antenna for ground penetrating radar using finite difference time domain simulation

Cleveland Clinic Foundation Lerner Research Institute Cleveland, OH Summer 2005
Advisor: S. Roy
Observed and modeled adult stem-cell kinetics on micro-fabricated surfaces for tissue engineering

Harvard-Smithsonian Center for Astrophysics Cambridge, MA Summer 2004
Advisor: P.B. Reid
Developed protocol and produced first profile of grazing-incidence optics for the IXO x-ray telescope

Case Western Reserve University, Physics Department Cleveland, OH Summer 2002
Advisor: D.S. Akerib
Assisted with experimental setup, maintenance, and improvement for the Cryogenic Dark Matter Search II

Field Experience

The ICECAP Project and Operation Ice Bridge Antarctic Seasons: 2008, 2009, 2010
International Airborne Antarctic Geophysical Survey
Role: **Lead RF Field Engineer** and Radar Operator
Sponsoring Agencies: NSF (US), NASA (US), NERC (UK), AAD (AUS), IPEV (FR), and PNRA (IT)
Bases of Operation: McMurdo (US), Casey (AUS), Terra Nova (IT), Cap Prud'homme (FR)
Targets: Aurora Subglacial Basin, Astrolabe Glacier, Byrd Glacier, Totten Glacier, and Wilkes Glacier
Instruments: VHF Radar, HF Radar, GPS, Gravimeter, Magnetometer, Photon-Counting Lidar

Led the RF development, testing, and operation of the University of Texas HiCARS II airborne ice-penetrating radar sounder

Teaching Experience

Short Course on Ice Sheet Sounding Radar UTIG Airborne Geophysics Group Spring 2010
Taught a short course on radar principles and their application to focused airborne radar sounding of ice

High School Science Olympiad Coach Liberal Arts and Sciences Academy 2007 - Present
Placement Nationally: 30th (2007), 19th (2008), 8th (2009), 7th (2010), 9th (2011), 7th (2012)

Astronomy National Event Supervisor Science Olympiad National Championships 2003 - Present
Write rules and National Championship Exam for high school and middle school students

Synergistic Activities

Jupiter Icy Moon Explorer (ESA)	*Radar Sounder Working Group*	2011 - present
Earth and Space Sciences Committee	*National Science Olympiad*	2003 - Present
Physics Committee	*National Science Olympiad*	2011 - Present
Europa Science Definition Team (NASA)	*Technical White Paper Author*	Summer 2012
Clinton Global Initiative University	*Energy and Climate Change Session*	Spring 2009
Freescale Semiconductor University Relations	*Program Lead*	2007 - 2008
Journal of Geophysical Research	*Reviewer*	
Geophysical Research Letters	*Reviewer*	

Outreach

Aurora Australis, AAD Voyage: Casey to Hobart	*Onboard Science Lecture Speaker*	Spring 2011
Bucknell University Physics Department	*Weekly Colloquium*	Fall 2010
University Methodist Church, Austin, TX	*Guest Speaker*	Spring 2010
Solon High School, Solon, OH	*Guest Speaker*	Spring 2010
Tejas Club, Austin, TX	*Life Raft Debate Winner*	Spring 2010
University of Texas Institute for Geophysics	*Brownbag Speaker*	Spring 2009
Science Olympiad Coaches Clinic, Dearborn, MI	*Astronomy Session Speaker*	Fall 2008
Tufts University, Wright Center for Science Education	*Space Science Workshop Speaker*	Summer 2004

Professional Affiliations

American Geophysical Union
International Glaciological Society
IEEE Geoscience and Remote Sensing Society
IEEE Antennas and Propagation Society

Mentoring

Undergraduate Students

Arami Rosales	*University of Texas, Austin*	*Physics*	2011 - Present
Evelyn Powell	*University of Texas, Austin*	*Physics, Plan II Honors*	2010 - Present
John Desantos	*University of Texas, Austin*	*Physics, Plan II Honors*	2008 - Present
Tad Komack	*University of Chicago*	*Geophysical Science*	2008 - Present
Leo Breston	*University of Illinois, Urbana-Champaign*	*Engineering*	Summer 2012
Harris Davidson	*University of Illinois, Urbana-Champaign*	*Engineering*	Summer 2012

High School Students

Marc Sands	*LASA 2010 - 2012*	*Now Studying Physics*	*At the University of Chicago*
Daniel Wang	*LASA 2010 - 2012*	*Now Studying Mathematics*	*At the Massachusetts Institute of Technology*
Chris Wang	*LASA 2010 - 2012*	*Now Undeclared*	*At the Columbia University*
Calvin Ling	*LASA 2010 - 2012*	*Now Studying Business*	*At Stanford University*
Victoria Cui	*LASA 2009 - 2011*	*Now Studying Neuroscience*	*At Columbia University*
Jeffery Holzgrafe	*LASA 2009 – 2011*	*Now Studying Chemical Engineering*	*At Olin College*
Chloe Ling	*LASA 2009 – 2011*	*Now Studying Chemistry*	*At the California Institute of Technology*
Angela Liu	*LASA 2009 – 2011*	*Now Undeclared*	*At Yale University*
Eliza McDonald	*LASA 2008 – 2010*	*Now Studying Astrophysics*	*At the University of California, Berkeley*
Rose Kent McGlew	*LASA 2008 – 2010*	*Now Studying Forensic Science*	*At the University of Oregon*
Frasier Liljestrand	*LASA 2008 – 2009*	*Now Studying Geoscience*	*At Rice University*
Ryan Doubrava	*LASA 2008 – 2009*	*Now Studying Classics*	*At the University of Texas, Austin*
Andrew Vanderberg	*LASA 2008 – 2009*	*Now Studying Physics*	*At the University of California, Berkeley*
Jonathan Hillis	*LASA 2008 – 2009*	*Now Studying Environmental Studies*	*At Carleton College*

Publications

Refereed Articles

A.P. Wright, D.A. Young, J.L. Roberts, **D.M. Schroeder**, J.L. Bamber, J.A. Dowdeswell, N.W. Young, A.M. Le Brocq, R.C. Warner, A.J. Payne, D.D. Blankenship, T.D. van Ommen, M.J. Siegert. *Evidence for a Hydrological Connection Between the Ice Divide and Ice Sheet Margin in the Aurora Subglacial Basin Sector of East Antarctica*, JGR Earth Surface ,117, March 2012

D.A. Young, A.P. Wright, J.L. Roberts, R.C. Warner, N.W. Young, J.S. Greenbaum, **D.M. Schroeder**, D.E. Sugden, J.W. Holt, D.D. Blankenship, T. Van Ommen, M.J. Siegert. *A Dynamic Early East Antarctic Ice Sheet Suggested by Ice Covered Fjord Landscapes*, **Nature**, 2, June 2011

Selected Abstracts: Invited Talks

D.M. Schroeder. *Interpretation of Subglacial Hydrologic Systems from Radar Echo Specularity: Application to Thwaites Glacier, West Antarctica*, Johns Hopkins University Applied Physics Lab, July 2012

D.M. Schroeder, D.D. Blankenship, D.A. Young. *Interpretation of Sub-resolution Bedform and Subglacial Hydrologic Network Geometries from Radar Echo Specularity: Application to Thwaites Glacier, West Antarctica*, AGU Fall Meeting, December 2011

Selected Abstracts: Oral Presentations

D.A. Young, J.L. Roberts, A.P. Wright, J.S. Greenbaum, S.D. Kempf, G. Ng, T.G. Richter, J.W. Holt, E. Le Meur, **D.M. Schroeder**, R.C. Warner, N.W. Young, D.D. Blankenship, M.J. Siegert, T. Van Ommen. *ICECAP Data Over the Periphery of East Antarctica: A New View of a Crucial Ice Sheet,* SCAR Open Science Conference, Portland, OR, July 2012

D. D. Blankenship, B. E. Schmidt, D. A. Young, **D.M. Schroeder**, J.S. Greenbaum. *The Search for a Habitable Europa: Radar, Water, and an Active Ice Shell,* EPSC-DPS Joint Meeting, October 2011

D.A. Young, **D.M. Schroeder**, D.D. Blankenship, C.S. Jackson, M.J. Siegert, A.P. Wright, J.L. Roberts, R.C. Warner, T. van Ommen, N.W. Young. *Under the Antarctic Ice: New Data in the East, New Approaches in the West,* WAIS Workshop, Loveland, CO, September 2011 **(invited)**

D.M. Schroeder, D.D. Blankenship, D.A. Young. *The Basal Boundary of the Thwaites Glacier Catchment: Characterizing and Anisotropic Hydrological Environment*, International Symposium on Antarctic Earth Science, Edinburgh, UK, July 2011

D.M. Schroeder, D.D. Blankenship, D.A. Young. *Basal Specularity of Thwaites Glacier, West Antarctica: Results from a New Tool for Evaluating Subglacial Hydrology*, West Antarctic Ice Sheet Workshop, Raystown, PA, September 2010

D.M. Schroeder, D.D. Blankenship, D.A. Young. *The Subglacial Hydrology of Thwaites Glacier: Characterization and Interpretation of a Basin-Scale Specularity Map*, SCAR Open Science Conference, Buenos Aires, Argentina, August 2010

D.A. Young, D.D. Blankenship, M.J. Siegert, T. Van Ommen, A.P. Wright, J.L. Roberts, J.S. Greenbaum, B.C. Frederick, **D.M. Schroeder**, J.W. Holt, R.C. Warner, N.W. Young. *Extent, geomorphology and geo- physics of the Aurora and Wilkes Subglacial Basins, East Antarctica: Influences on ice sheet architecture*, SCAR Open Science Conference, Buenos Aires, Argentina, August 2010

A.P. Wright, M.J. Siegert, D.A. Young, D.D. Blankenship, T. Van Ommen, J.L. Roberts, J.S. Greenbaum, B.C. Fredrick, **D.M. Schroeder**, J.W. Holt, R.C. Warner, N.W. Young. *Subglacial hydrology of the Aurora Basin, East Antarctica, from the geophysical investigations of the ICECAP project*, SCAR Open Science Conference, Buenos Aires, Argentina, August 2010

J.W. Holt, D.A. Young, D.D. Blankenship, J.S. Greenbaum, **D.M. Schroeder**, T.G. Richter, A.P. Wright, T. Van Ommen, M.J. Siegert, J.L. Roberts, R.C. Warner. *Bed topography of the Byrd Glacier trunk from radar soundings of the ICECAP project*, SCAR Open Science Conference, Buenos Aires, Argentina, August 2010

D.M. Schroeder, D.D. Blankenship, D.A. Young. *Improved Characterization of Subglacial Hydrology Using Multiple Radar Focusing Windows: Examples from Thwaites Glacier, West Antarctica*, First Antarctic Climate Evolution Symposium, Granada, Spain, September 2009

Selected Abstracts: Posters

D.M. Schroeder, D.D. Blankenship, D.A. Young. *Comparative Subglacial Hydrology of Thwaites Glacier, Using Basal Specularity*, Chapman Conference, Exploration and Study of Antarctic Subglacial Aquatic Systems, Baltimore, March 2010

D.M. Schroeder, D.D. Blankenship, D.A. Young. *Remote Sensing of Subglacial Water Networks with Ice Penetrating Radar,* Chapman on Remote Sensing of Terrestrial Water Cycle, Kona, February 2012

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