

Dustin M. Schroeder

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

Honors

University of Texas Graduate School, David Brunton Jr. Fellowship	2012
University of Texas Institute for Geophysics, Gale White Fellowship	2012
Friar Society, <i>Oldest Honor Society at the University of Texas</i>	2010
NSF Graduate Research Fellowship	2009, 2013, 2014
University of Texas Graduate School Recruitment Fellowship , <i>Top 10% in Discipline</i>	2008
Bucknell University, Thelma Johns Showalter Prize, <i>For Greatest Promise in Public Affairs</i>	2007
COMAP Mathematical Contest in Modeling, Meritorious Winner	2005
Phi Beta Kappa , <i>Liberal Arts Honor Society</i>	
Tau Beta Pi , <i>Engineering Honor Society</i>	
Sigma Pi Sigma , <i>Physics Honor Society</i>	

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

Radar Sounder Working Group	<i>Jupiter Icy Moon Explorer</i>	2011 - present
Earth and Space Sciences Committee	<i>National Science Olympiad</i>	2003 - Present
Physics Committee	<i>National Science Olympiad</i>	2011 - Present
Clinton Global Initiative University	<i>Energy and Climate Change Session</i>	Spring 2009
Freescale Semiconductor University Relations	<i>Program Lead</i>	2007 - 2008
Journal of Geophysical Research	<i>Reviewer</i>	
Geophysical Research Letters	<i>Reviewer</i>	

Outreach

Aurora Australis, AAD Voyage: Casey to Hobart	<i>Onboard Science Lecture Speaker</i>	Spring 2011
Bucknell University Physics Department	<i>Weekly Colloquium</i>	Fall 2010
University Methodist Church, Austin, TX	<i>Guest Speaker</i>	Spring 2010
Solon High School, Solon, OH	<i>Guest Speaker</i>	Spring 2010
Tejas Club, Austin, TX	<i>Life Raft Debate Winner</i>	Spring 2010
University of Texas Institute for Geophysics	<i>Brownbag Speaker</i>	Spring 2009
Science Olympiad Coaches Clinic, Dearborn, MI	<i>Astronomy Session Speaker</i>	Fall 2008
Tufts University, Wright Center for Science Education	<i>Space Science Workshop Speaker</i>	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	<i>University of Texas, Austin</i>	<i>Physics</i>	2011 - Present
Evelyn Powell	<i>University of Texas, Austin</i>	<i>Physics, Plan II Honors</i>	2010 - Present
John Desantos	<i>University of Texas, Austin</i>	<i>Physics, Plan II Honors</i>	2008 - Present
Tad Komack	<i>University of Chicago</i>	<i>Geophysical Science</i>	2008 - Present
Leo Breston	<i>University of Illinois, Urbana-Champaign</i>	<i>Engineering</i>	Summer 2012
Harris Davidson	<i>University of Illinois, Urbana-Champaign</i>	<i>Engineering</i>	Summer 2012

High School Students

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

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.M. Schroeder, D.B. Blankenship, D.A. Young. *Evidence for Ice-Flow-Coupled Subglacial Water Systems Beneath West Antarctica's Potentially Unstable Thwaites Glacier*, WAIS Workshop, Eatonville, WA, September 2012

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 geophysics 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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