

## Curriculum Vitae

### Daniel A. Miller II, Ph.D.

Associate Professor  
Department of Mechanical and Industrial Engineering  
Montana State University  
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## Professional Preparation

Montana State University	Engineering, Applied Mechanics	Ph.D. (2002)
Air Force Institute of Technology	Aeronautical Engineering	M.S. (1993)
Montana State University	Mechanical Engineering	B.S. (1987)

## Appointments

### *(Academic)*

Associate Professor, Department of Mechanical & Industrial Engineering, Montana State University (2015-Present)  
Associate Professor, Department of Civil Engineering, Montana State University (2008-2014)  
Associate Professor, Department of Astronautics, US Air Force Academy (2004 - 2006)  
Assistant Professor, Department of Astronautics, US Air Force Academy (2002 - 2004)  
Assistant Professor, Department of Astronautics, US Air Force Academy (1998 - 1999)  
Instructor, Department of Astronautics, US Air Force Academy (1996 - 1998)

### *(Administrative)*

Head, Department of Mechanical & Industrial Engineering, Montana State University (2015-Present)  
Commander, 718<sup>th</sup> Test Squadron, Arnold Engineering Development Center, TN (2006 - 2008)  
Deputy Head, Department of Astronautics, US Air Force Academy (2004 - 2006)  
Systems Division Chief, Department of Astronautics, US Air Force Academy (2002 - 2004)  
Director of Labs, Department of Astronautics, US Air Force Academy (1998 - 1999)  
Program Manager, Ground Based Laser Lethality, Air Force Research Lab (1994 - 1996)  
Peacekeeper Program Systems Engineer, Air Force Ballistic Systems Division (1988-1992)

### *(Research)*

Subzero Science and Engineering Research Facility Management Committee (2008-Present)  
Director, Falcon Launch Sounding Rocket Research Program, Space Systems Research Center, US Air Force Academy (2002 - 2005)  
Program Manager/Chief Engineer, FalconSAT-3 Small Satellite Research Program, Space Systems Research Center, US Air Force Academy (2002 - 2006)  
Graduate Research, cold regions emphasis area, Montana State University (1999 - 2002)  
Chief Engineer, FalconSAT and Falcon Gold Small Satellite Research Programs, US Air Force Academy (1997 - 1999)  
Research Director, Department of Astronautics, US Air Force Academy (1996 - 1998)

## **Awards**

*2006 Carnegie Foundation for the Advancement of Teaching US Professor of the Year, Colorado*

*2006 US Air Force Science and Engineering Research Manager of the Year*

*2005 American Institute of Aeronautics & Astronautics Engineer of the Year, Rocky Mountain Section*

*2003 Gen John P. Wittry Award for Outstanding Instructor in Engineering Design, US Air Force Academy*

*1999 Outstanding Instructor of Astronautics, US Air Force Academy*

Numerous military awards and decorations

## **Professional and Honor Society Membership**

American Avalanche Association – Professional Status

International Society of Explosives Engineers

Tau Beta Pi and Sigma Gamma Tau

## **Invited Presentations**

**Miller, D.A.**, “Enhanced range and volume of affected hard slab snow to suspended explosives”, *Southwest Montana Avalanche Seminar, Big Sky Resort, MT, November 2014*

**Miller, D.A.**, “A microstructure based approach to snow fracture”, *4<sup>th</sup> Annual Avalanche Professional Development Seminar, Bozeman, MT, April 2014*

**Miller, D.A.**, “Measurements of explosives placements and snowpack response”, *Southwest Montana Avalanche Seminar, Bridger Bowl, MT, November 2011*

**Miller, D.A.**, “Explosives and snowpack interaction”, *Sierra Avalanche Center Professional Development Workshop, Sierra Nevada Avalanche Center, Lake Tahoe, CA, April 2011*

**Miller, D.A.**, “Explosives and the snowpack: current research and findings”, *Post-Control Release and Surprise Avalanche Professional Development Workshop, Gallatin National Forest Avalanche Center, Bozeman, MT, March 2011*

**Miller, D.A.**, “Explosives and Snow Interaction Study: A new test and analysis program”, *2010 Southwest Montana Avalanche Seminar, Big Sky, MT, November 2010*

**Miller, D.A.**, “MSU’s Explosives and Snow Interaction Study: A new test and analysis program”, *2010 Avalanche Artillery Users of North America Committee, Seattle, WA, May 2010*

**Miller, D.A.**, “Explosives and snow interaction”, *Avalanche Hazard Reduction and Post Control and/or Surprise Avalanches Seminar, Leadville, CO, March 2010*

**Miller, D.A.**, “Explosive Avalanche Control Research at MSU”, *2009 Southwest Montana Ski Patrol Professional Development Seminar, Bozeman, MT, November 2009*

**Miller, D.A.**, “Recent advances in explosive avalanche control research”, *2009 Colorado Snow and Avalanche Workshop, Leadville, CO, October 2009*

**Miller, D.A.**, Conference Keynote Speaker: *2009 American Society of Civil Engineers Pacific Northwest Regional Student Conference, Carroll College, MT, April 2009*

**Miller, D.A.**, “Explosives in avalanche control: Can we improve effectiveness?”, *2009 Pacific Northwest Avalanche Control Conference, Mt Hood Meadows, OR, March 2009*

### Relevant Refereed Publications (chronological)

- Binger, J. and **D.A. Miller**, “An experimental study of soft and hard slab snow dynamic response to explosives used in avalanche”, *Journal of Cold Regions Engineering*, In revision (2015)
- Stanton, B., **D.A. Miller**, J. Shaw and E.E. Adams, “An experimental investigation of visible bidirectional reflectance of rounded snow grains and surface hoar”, *Cold Regions Science and Technology*, In Review (2015)
- Woolridge, R., J. Hendrikx and **D.A. Miller**, “The effects of explosives on select snow properties”, *Cold Regions Science and Technology*, In Review (2015)
- LeBaron, A.M., **D.A. Miller** and A. van Herwijnen, “Measurements of the deformation zone around a semicylindrical snow micropenetrometer tip”, *Cold Regions Science and Technology*, Vol 97, 90-96 (2014)
- Staron, P.J., E.E. Adams and **D.A. Miller**, “Thermal optimization of snow microstructure through kinetic metamorphism”, *Cold Regions Science and Technology*, Vol 97, 60-71 (2014)
- van Herwijnen, A. and **D.A. Miller**, “Experimental and numerical investigation of the sintering rate of snow”, *Journal of Glaciology*, Vol 59, No 214, 269-274 (2013)
- Bones, J., **D.A. Miller** and R. Larson, “Exploring the effectiveness of explosives for avalanche control”, *International Society of Explosives Engineers 38<sup>th</sup> Annual Conference on Explosives & Blasting Technique*, Nashville, TN (2012)
- Miller, D.A.**, R.G. Tichota and E.E. Adams, “Studying snow’s response to explosive airblast during avalanche control using an explicit numerical model”, *Cold Regions Science and Technology*, Vol 69, 156-164 (2011)
- Adams, E.E., A.E. Slaughter, L. McKittrick, and **D.A. Miller**, “Local terrain topography and thermal properties influence on energy and mass balance of a snowcover”, *Annals of Glaciology*, Vol 58, 169 – 174 (2011)
- Miller, D.A.** and E.E. Adams, “A microstructural dry-snow metamorphism model for kinetic crystal growth”, *Journal of Glaciology*, Vol 55, No. 194, 1003 – 1011 (2009)
- Miller, D.A.**, E.E. Adams, and B.W. Gunnink, “Montana State University’s Subzero Science and Engineering Research Facility: New interdisciplinary cold regions research laboratories”, *ASCE 14<sup>th</sup> Conference on Cold Regions Engineering Proceedings*, Duluth, MN, August 30 – September 2, 2009
- Miller D.A.**, E.E. Adams and R.L. Brown, “A microstructural approach to predict dry snow metamorphism in generalized thermal conditions”, *Cold Regions Science and Technology*, 37, 213 – 226 (2003)
- Miller D.A.**, E.E. Adams, D.S. Schmidt and R.L. Brown, “Preliminary experimental evidence of heating at the running surface of avalanching snow”, *Cold Regions Science and Technology*, 37, 421-427 (2003)
- Adams, E. E. and **D. A. Miller**, “Ice Crystals grown from vapor onto an oriented substrate: Application to snow depth hoar development and gas inclusions in lake ice”, *Journal of Glaciology*, Vol 49, No 164 (2003)
- Adams, E.E., **D.A. Miller** and R.L. Brown. "Grain boundary ridge on sintered bonds between ice crystals", *Journal of Applied Physics*, Vol 90, Number 11 (2001)
- Miller, D.A.** and A.N. Palazatto “Nonlinear finite element analysis of composite beams and arches using a large rotation theory”, *Finite Elements in Analysis and Design*, 19, 131-152 (1995)

## Relevant Conference Papers

- Miller, D.A.** and J. Bones, “Experimentally derived affected snow volumes and dynamic response of hard slab snow from explosives”, *International Snow Science Workshop*, Banff, Alberta, Canada, September 2014
- Miller, D.A.**, B. Stanton, E.E. Adams, “Visible bidirectional reflectance measurements for two relevant snow surface morphologies”, *International Snow Science Workshop*, Banff, Alberta, Canada, September 2014
- A.M. LeBaron and **D.A. Miller**, “An energy-based microstructural constitutive model for fracture in snow”, *International Snow Science Workshop*, Banff, Alberta, Canada, September 2014
- R. Wooldridge, J. Hendrikx and **D.A. Miller**, “Field Observations of the Effects of Explosives on Snow Density and Snow Stability Test Results”, *International Snow Science Workshop*, Banff, Alberta, Canada, September 2014
- Miller D.A.**, B. Stanton and E.E. Adams, “Laboratory growth and visible bi-directional reflectance factor of surface hoar”, *Davos Atmosphere and Cryosphere Assembly DACA 2013*, Davos, Switzerland, July, 2013
- Miller D.A.**, B. Stanton and E.E. Adams, “Visible bidirectional-reflectance measurements for rounded grains and surface hoar snow crystal morphologies”, *Davos Atmosphere and Cryosphere Assembly DACA 2013*, Davos, Switzerland, July, 2013
- Wooldridge, R., Hendrikx, J., **D.A. Miller** and K. Birkeland, “The Effects of Explosives on Select Snow Properties”, *2012 Colorado Snow and Avalanche Workshop*, Leadville, CO, October 2012
- Stanton, B., **D.A. Miller** and E.E. Adams, “Analysis of Surface Hoar Growth Under Simulated Meteorological Conditions”, *International Snow Science Workshop*, Anchorage, AK, September 2012
- Bones, J., **D.A. Miller**, S. Savage, “An experimental dynamic response study of hard slab seasonal snow to explosive avalanche hazard mitigation”, *International Snow Science Workshop*, Anchorage, AK, September 2012
- Staron, P.J., E.E. Adams and **D.A. Miller**, “Formation of depth hoar resulting from thermal optimization of snow microstructure”, *International Snow Science Workshop*, Anchorage, AK, September 2012
- Wooldridge, R., Hendrikx, J., **D.A. Miller** and K. Birkeland, “The Effects of Explosives on the Physical Properties of Snow”, *International Snow Science Workshop*, Anchorage, AK, September 2012
- LeBaron, A. M., **D.A. Miller** and A. van Herwijnen, “Axisymmetric measurements of extended deformation around the snow micropenetrometer tip”, *International Snow Science Workshop*, Anchorage, AK, September 2012
- Miller, D.A.**, R.G. Tichota and E.E. Adams, “An explicit nonlinear numerical model of explosive airblast on snow and implications for avalanche control”, *International Snow Science Workshop*, Lake Tahoe, CA, October 2010
- Tichota, R.G., **D.A. Miller**, R. Larson and D. Richmond, “An experimental investigation of explosives and snowpack dynamic response”, *International Snow Science Workshop*, Lake Tahoe, CA, October 2010

- Adams, E.E. A.E. Slaughter, L. McKittrick and **D.A. Miller**, “Local Terrain Topography and Thermal Properties Influence on Energy and Mass Balance”, *International Glaciological Society Symposium on Snow, Ice and Humanity in a Changing Climate*. Sapporo, Japan. 21 – 27 June 2010
- Adams, E., L. McKittrick, A. Slaughter, P. Staron, R. Shertzer, **D. Miller**, T. Leonard, D. McCabe, I. Henninger, D. Catharine, M. Cooperstein and K. Laveck, “Modeling variation of surface hoar and radiation recrystallization across a slope”, *International Snow Science Workshop*, Davos, Switzerland, October 2009
- Slaughter, A.E., Adams, E.E. and **Miller, D.A.** “Modeling and Measurements Dealing with Near Surface Snow”, *Inland Northwest Research Alliance, Lessons from Continuity and Change in the Fourth International Polar Year*, Fairbanks, AK, March 2009
- Adams, E.E., A.E. Slaughter and **D.A. Miller**, “Energy balance coupling in near surface snow metamorphism”, *Inland Northwest Research Alliance, Lessons from Continuity and Change in the Fourth International Polar Year Symposium*, Fairbanks, AK, March 2009
- Siegenthaler, K. E., T. J. Lawrence, **D. A. Miller**, D. E. Swanson, M. J. Meerman, D. J. Barnhart, M. Geoff. McHarg, and J. White “Nurturing Our Satellite Space Workforce at the United States Air Force Academy,” AIAA-2005-6779, *AIAA Space 2005 Conference*, Long Beach, CA, August 30 -1 September, 2005
- Siegenthaler, K. E., T. J. Lawrence, **D. A. Miller**, R. A. Sandfry, M. J. Meerman, G. E. Yale, and T. B. Joslyn “Nurturing Our Rocket Space Workforce at the United States Air Force Academy,” AIAA-2005-6780, *AIAA Space 2005 Conference*, Long Beach, CA, August 30 - 1 September, 2005
- Siegenthaler, K. E., J.J. Sellers, **D.A. Miller**, T.J. Lawrence, D.J. Richie, and D.J. Barnhart “The undergraduate satellite and rocket design, fabrication, and launch program at the US Air Force Academy”, *International Symposium IGIP/IEEE/ASEE 2004*, Fribourg, Switzerland, September 2004
- Adams, E.E. and **D.A. Miller**, “Bond and Crystal Growth in a Snowpack”, *American Geophysical Union Meeting*, San Francisco, CA, USA, December 2002
- Adams, E. E. and **D. A. Miller**, “Morphology of crystal growth and grain bonding in snow”, *International Snow Science Workshop*, Penticton, British Columbia, Canada, October 2002
- Miller D.A.**, E.E. Adams and R.L. Brown, “A microstructural approach to predict dry snow metamorphism in generalized thermal conditions”, *International Snow Science Workshop*, Penticton, British Columbia, Canada, October 2002
- Miller, D.A.**, E.E. Adams. D.S. Schmidt and R.L. Brown, “Frictional heating of avalanching snow and sintering analysis of avalanche debris”, *International Snow Science Workshop*, Penticton, British Columbia, Canada, October 2002

## Technical Reports

- Miller D.A.**, “Micro x-ray CT Scanner with Cold Adaptation and Material Test Capability for the Subzero Science and Engineering Research Facility”, Final Report to the M.J. Murdock Charitable Trust, August 2012, 13pp.
- Miller, D.A.**, A.E. Slaughter and B.T. Stanton, “Snow Near Surface Morphologies and Influence on Solar Albedo”, Final Report for Montana Space Grant Consortium Montana NASA EPSCoR Research Initiation, Grant 4W2994, August 2011, 31 pp.