Greg Lucas

Curriculum Vitae

Education

2012–Present **Ph.D. in Aerospace Engineering**, *University of Colorado*, Boulder, CO.
Concentration: Remote Sensing

Supervisor Professor Jeffrey Thayer

2005–2010 **MS in Medical Physics**, *University of Wisconsin*, Madison, WI.
Focus on particle transport applications for radiation treatment programs.

2005–2010 **BS in Nuclear Engineering**, *University of Wisconsin*, Madison, WI.

2005–2009 **Certificate of Computer Science**, *University of Wisconsin*, Madison, WI.
Focus on numerical methods and scientific programming.

Experience

2012–Present **Research Assistant**, *University of Colorado*, Boulder, CO.
Developing an analytical model to represent the global electrical circuit.

2009–2013 **Member of the Technical Staff**, *Sandia National Laboratories*, Albuquerque, NM.
Worked on risk analysis related to launching nuclear material into space.

- Designed a new code suite for consequence analysis
  - Takes releases from the ground and transports them through the atmosphere and determines the health effect outcome.
  - Centered around a modular framework to allow new codes to be integrated seamlessly in the future.
- Parallelized previous codes to enable many more simulations to be completed.
- Recognized by review panel for innovative approaches to risk analysis.

2009–2010 **Project Assistant**, *University of Wisconsin*, Madison, WI.
Wrote a primer on MCNP code and assisted with senior design projects.

2008–2009 **Instructor**, *University of Wisconsin*, Madison, WI.
Taught supplementary classes on engineering statics and dynamics.

2008–2008 **Intern**, *Los Alamos National Laboratories*, Los Alamos, NM.
Designed radiation shields for a lunar space reactor.

2007–2007 **Intern**, *Mayo Clinic*, Rochester, MN.
Assisted in dual-source dual-energy CT research.

Computer skills

Programming Fortran, Python, Java, Matlab

Other Linux, MPI, Version Control

Affiliations

American Nuclear Society

American Institute of Aeronautics and Astronautics

American Geophysical Union

Awards

Nuclear Regulatory Commission Scholarship

Dean's Honor List (every semester)

Nuclear Engineering Scholarship (2)

Freshman Academic Achievement Award

ANS Treasurer and Governor

All-State High School Soccer, Minnesota

Mentored Students

Student Interns: Brock Wiberg

Teaching Experience

1 credit supplemental engineering statics: 2 semesters

1 credit supplemental engineering dynamics: 1 semester

Teaching assistant for reactor core design on senior projects

Publications

Papers

L. Akin *et al.*, "Final safety analysis report for the mars science laboratory mmrtg launch approval addendum.," 2010. SAND2010-2547.

L. Akin *et al.*, "Final safety analysis report for the mars science laboratory mmrtg launch approval addendum update.," 2010. SAND2010-5559.

A. J. G. Baumgaertner, J. P. Thayer, R. R. Neely, and G. Lucas, "Toward a comprehensive global electric circuit model: Atmospheric conductivity and its variability in cesm1(waccm) modelâĂĽsimulations," *J. Geophys. Res.*, vol. 118, no. 16, pp. 9221–9232, 2013.

Conferences

D. Clayton and G. Lucas, "Solid propellant behavior in radioisotope power systems accident sequence modeling." `http://www.lpi.usra.edu/meetings/nets2012/pdf/3046.pdf`, February 2012. Nuclear and Emerging Technologies in Space.

D. Clayton, G. Lucas, and T. Radel, "Resulting source term from the mars science laboratory safety analysis." `http://www.lpi.usra.edu/meetings/nets2012/pdf/3009.pdf`, February 2012. Nuclear and Emerging Technologies in Space.

D. Clayton, G. Lucas, T. Radel, and B. Wiberg, "Accident sequence modeling for

radioisotope power systems." http://www.lpi.usra.edu/meetings/nets2012/pdf/3008.pdf, February 2012. Nuclear and Emerging Technologies in Space.

G. Lucas, "Microstructural evolution of iridium cladding," September 2011. Poster, International Nuclear Fuels Conference.

G. Lucas, A. Baumgaertner, and J. Thayer, "Analytic model of the global electric circuit," 2013.

G. Lucas, N. Bixler, and R. Lipinski, "Dose calculations for nuclear thermal rocket exhaust," February 2013. Nuclear and Emerging Technologies in Space.

G. M. Lucas, E. Lehto, A. J. G. Baumgaertner, J. P. Thayer, J. M. Forbes, and X. Zhang, "Modeling the electrical characteristics of the global electric circuit," 2013.

G. M. Lucas, A. J. G. Baumgaertner, and J. P. Thayer, "Numerical modeling of the global electric circuit," 2014.

T. Radel and G. Lucas, "Modeling solid propellant shielding phenomena for launch accident analysis," November 2009. American Nuclear Society.

L. Yu, G. Lucas, A. Primak, O. Dzyubak, X. Liu, and C. McCollough, "Dual-source dual-energy ct (dect) combined images can provide improved image quality relative to single-energy ct with no increase in patient dose," 2007. Radiological Society of North America, Abstract 5011915.