

## Ryan K. Haaland

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### CONTACT INFORMATION

Fort Lewis College  
Department of Physics & Engineering  
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### EXPERIENCE

Over twelve years experience in physics education at selective undergraduate institutions. Extensive experience teaching undergraduate physics, from introductory service courses to courses for the physics major, including laboratories. Guiding undergraduates in collaborative, interdisciplinary (science and engineering) research efforts as part of the Air Force Academy's Small Satellite and Unmanned Aerial Vehicle programs. Many years of experience as student academic advisor and mentor. Experience in undergraduate physics curriculum development and assessment. A broad range of department and institution-level administrative responsibilities as a senior faculty member and department chair including curriculum development and assessment, strategic planning, faculty training and development, and accreditation. Over 20 years experience in space environment and space systems research and development for the Air Force and Department of Defense.

### EDUCATION

#### **University of Oxford**, Oxford, UK

Doctor of Philosophy, Physics, June, 1999

#### **University of California, Los Angeles**, Los Angeles, California

Master of Science, Geophysics and Space Physics, May, 1990

#### **Concordia College**, Moorhead, Minnesota

Bachelor of Arts, Physics and Mathematics, May, 1985

### MILITARY EDUCATION

#### **Air War College**

Non-resident

Air University Maxwell Air Force Base, Alabama, June, 2005

#### **Air Command and Staff College**

Non-resident seminar

Air University Maxwell Air Force Base, Alabama, July, 1999

#### **Squadron Officer School**

Distinguished Graduate

Air University, Maxwell Air Force Base, Alabama, August, 1991

### ACADEMIC RANK

Associate Professor of Physics, July 2002

Assistant Professor of Physics, July 1992

### SOCIETY MEMBERSHIP

American Geophysical Union

American Association of Physics Teachers

PROFESSIONAL  
EXPERIENCE

**Department of Physics & Engineering**, Fort Lewis College, Durango Colorado

*Associate Professor of Physics*

**August, 2006 – Present**

**Department of Physics**, United States Air Force Academy, Colorado

*Department Chair*

**July, 2004 – June, 2006**

Chair department of 45 faculty and staff, teaching 30 physics courses to over 2,700 students annually. Responsible for research centers in Lasers and Optics, Physics Education, and Space and Atmospheric physics and the Academy Observatory.

**Office of the Dean of the Faculty**, United States Air Force Academy

*Interim Director of Faculty Research*

**May, 2004 – June 2004**

Served as the Chief Scientist, U.S. Air Force Academy with oversight of nine research centers and a research enterprise with approximately \$20M in annual funding.

**Department of Physics**, United States Air Force Academy

*Deputy Department Chair*

**January, 2004 – May 2004**

Principle deputy to department Chair, serving in Chair's stead during absences with full authority for curriculum and operational issues.

*Director of Operations*

**December, 2002 – December 2003**

Coordinate daily operations of the department: course offerings, exams and facilities scheduling, faculty teaching assignments, faculty evaluations, and the department's operations and maintenance budget.

**National Reconnaissance Office**, Chantilly, Virginia

*Assistant to the Director, Research & Technology Sector*

**June, 2002 – November, 2002**

Technical advisor to the Director of the imaging intelligence advanced technology division.

**Department of Physics**, United States Air Force Academy

*Director of Operations*

**June, 2001 – June, 2002**

Coordinate daily operations of the department: course offerings, exams and facilities scheduling, faculty teaching assignments, faculty evaluations, and the department's operations and maintenance budget.

*Payload Manager, FalconSat-2 Mission*

**June, 2000 – June, 2002**

Science team (faculty and student) leader for the development of the Miniature Electrostatic Analyzer (MESA) and Retarding Potential Analyzer (RPA) payloads on board FalconSat-2.

*Director of Core Programs*

**June, 1999 – June, 2001**

Faculty coordinator responsible for two introductory, calculus-based physics courses taught to over 2,200 students per year. Responsible for course content, laboratories, faculty teaching schedules, new faculty training, exam administration, operating budget and student evaluation.

*Member FalconSat-1 Engineering Team*

**October, 1998 – January, 2000**

Member of power subsystem engineering team and payload science team for FalconSat-1.

*Director of Cadet Research* **June, 1998 – June, 1999**  
Coordinate all student independent study projects and summer research programs conducted throughout the Air Force, Department of Defense, NASA, and the Department of Energy.

*Assistant Professor of Physics & Advisor in Charge* **January, 1996 – June, 1998**  
Lead academic advisor for the department, guiding over 20 faculty advisors, mentoring over 80 student physics majors.

**University of Oxford**, Oxford, United Kingdom

*Graduate Student, Department of Physics* **September, 1992 – December, 1995**  
Developed novel, near-infrared spectrometer for space applications. Served on science development team for Cassini's Composite Infrared Spectrometer (CIRS) instrument.

**Department of Physics**, United States Air Force Academy, Colorado

*Instructor of Physics* **June, 1990 – August 1992**  
Taught introductory and Honors, calculus-based engineering physics. Academic advisor to students.

**Department of Earth & Space Science**, University of California, Los Angeles

*Masters Student, Space Physics* **September, 1988 – June 1990**  
Specialized in space plasma physics and the near-earth plasma environment.

**Air Force Astronautics Laboratory**, Edwards Air Force Base, California

*Advanced Spacecraft Propulsion Engineer* **September, 1985 – August 1988**  
Created, developed, and managed research programs with the Air Force and Department of Energy to develop advanced propulsion technology.

TEACHING  
EXPERIENCE

**Fort Lewis College**, Durango, Colorado

*Associate Professor of Physics* **2006–Present**

Introductory Physics I  
Principles of Electricity and Magnetism  
Technical Writing (Physics & Engineering)  
Computational Methods in Physics & Engineering (Winter 2007 term)  
Electric Networks I (Winter 2007 term)

**United States Air Force Academy**, Colorado

*Instructor, Assistant, & Associate Professor of Physics* **1990–1992, & 1996 – 2006**

Introductory Physics I  
Introductory Physics II & Honors Physics II  
Introduction to Laboratory Techniques  
Classical Mechanics  
Electricity and Magnetism I  
Electricity and Magnetism II  
Statistical and Thermal Physics  
Systems Engineering: Unmanned Aerial Vehicle Systems  
Small Spacecraft Engineering I  
Small Spacecraft Engineering II  
Independent Study

## PUBLICATIONS

Habash Krause, L. C.L. Enloe, R.K. Haaland, and P. Golando, “Microsatellite missions to conduct midlatitude studies of equatorial ionospheric plasma bubbles”, *Advances in Space Research*, IN PRESS.

Enloe, C.L., L. Habash Krause, R.K. Haaland, T.T. Patterson, C.E. Richardson, “Miniaturized electrostatic analyzer manufactured using photolithographic etching”, *Rev. Scientific Instruments*, **74** (3), March 2003.

McHarg, M., R.K. Haaland, D. Moudry, H. Stenbaek-Nielsen, “Altitude–Time Development of Sprites”, *J. Geophys. Res.*, Vol. **107**, NO. A11, 1363, 2002.

Majcen, S., R.K. Haaland, and S.C. Dudley, “The Poynting vector and power in a simple circuit”, *Am. J. Phys.*, **68** (9), September, 2000.

Naddy, C.J., S.C. Dudley, and R.K. Haaland, “Projectile Motion in Special Relativity”, *The Physics Teacher*, **38** (1), January 2000.

Enloe, C.L., W.A. Pakula, G.A. Finney, and R.K. Haaland, “Teleoperation in the Undergraduate Physics Laboratory—Teaching an Old Dog New Tricks”, *IEEE Transactions on Education*, **42** (3), August 1999.

Dudley S., B. Heerema, and R. Haaland, “The human discharge chain”, *Am. J. Phys.*, **65** (6), June 1997.†

†American Journal of Physics, “Editor’s Choice: Selected Papers 1988–2001”

CONFERENCE  
PROCEEDINGS &  
PRESENTATIONS

Heintz, Erin M., Krueger, Jerome A. and Ryan K. Haaland, “Modeling Changes in IR reflectance as a function of needle water potential in mature Ponderosa pine”, Presented at the 2005 Tri-Beta (Biology Honor Society) and Southwest Region Academy of Science Conferences, 2005.

Kramer, Kelly and R.K. Haaland, “Detection of Dehydrated Pine Trees Through Infrared Analysis”, *University of Colorado, Colorado Springs Journal of Undergraduate Research*, Vol. **1**, 2003–2004.

Habash Krause, L., C. Lon Enloe, R.K. Haaland, “Fast in situ measurements of ionospheric plasma with the Miniature Electrostatic Analyzer (MESA): An experiment aboard FalconSat-2”, *Proceedings of the IEEE 2002 Aerospace Conference*, Big Sky, MT, March 2002.

Habash Krause, L., C. L. Enloe, and R. K. Haaland, “Target of opportunity multipoint in situ measurements with FalconSAT-2”, Proc. 16th Annual AIAA/USU Small Satellite Conference, SSC02-IX-1, 2002.

Haaland, R.K., “A two-dimensional advection scheme for water vapour transport on Mars”, *Atmospheric, Oceanic and Planetary Physics Annual Review*, University of Oxford, September 1993.

Haaland, R.K., “Atmospheric VLF Phenomena, Whistlers”, *Atmospheric, Oceanic and Planetary Physics*, Department Seminar Series, University of Oxford, February 1993.

Bhattacharyya, S.K., L.W. Carlson, K.D. Kuczen, N.A. Hanan, R.G. Palmer, J. Von Hoomissen, W. Chiu, and R. Haaland. “Use of cermet-fueled nuclear reactors for direct nuclear propulsion”, in *Transactions of the Sixth Symposium on Space Nuclear Power Systems*, Institute for Space Nuclear Power Studies, The University of New Mexico, January, 1989.

Haaland, R.K., G. Allen Beale, and Andrew S. Martin, “High Performance Nuclear Propulsion”, in *The Case For Mars III*, Vol. **75**, Part II, C.R. Stoker, Ed., American Astronautical Society, 1989.

Haaland, R.K., and A. Martin, "Noncryogenic Propellants for a Nuclear Orbit Transfer Vehicle", in *Transactions of the Fifth Symposium on Space Nuclear Power Systems*, Institute for Space Nuclear Power Studies, The University of New Mexico, January, 1988.

Haaland, R.K. and G.A. Beale, "Nuclear Propulsion Progress", Joint Army, Navy, NASA, Air Force (JANNAF) Propulsion Meeting, San Diego, CA, December 1987.

Beale, G.A. and R.K. Haaland, "Project Forecast II Propulsion Technology: Nuclear Propulsion", Joint Army, Navy, NASA, Air Force (JANNAF) Propulsion Meeting, New Orleans, LA, August 1986.

CURRENT GRANTS None

HONORS AND AWARDS

Heiser Award Finalist, Two-time nominee for the Air Force Academy's top educator award

American Journal of Physics "Editor's Choice: Selected Papers, 1988-2000"

Air Force Meritorious Service Medal with Oak Leaf Cluster

Air Force Commendation Medal with Oak Leaf Cluster

Joint Meritorious Unit Award

Air Force Organizational Excellence Award with Oak Leaf Cluster

National Defense Service Medal with Bronze Star

Global War on Terrorism Service Medal

Distinguished Graduate, Squadron Officer School

Outstanding Flight Contributor, Squadron Officer School

National Reconnaissance Office Team Award

Inductee, Concordia College Athletic Hall of Fame

Company Grade Officer of the Quarter, Edwards AFB, CA

Distinguished Graduate, Air Force ROTC, North Dakota State University

Oxford Varsity Half-Blue, Ice Hockey, Oxford University