

FALCON RANKINS

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EDUCATION

University of Maryland, College Park, MD (August 2002 – present)
Currently pursuing Ph.D., Dept. of Aerospace Engineering. Examining the application of hybrid optimization techniques towards joint vehicle-trajectory optimization.

University of Maryland, College Park, MD (August 1999 – May 2002)
M.S. Degree (w/out thesis). Examined optimal trajectories for reduced heat loads encountered by trans-atmospheric hypersonic vehicles.

University of Maryland, College Park, MD (August 1995 – May 1999)
B.S. Degree, Dept. of Aerospace Engineering. Graduated *cum laude* with 4.0 GPA in major.

PUBLICATIONS

Starkey, Rankins, and Pines, "Effects of Hypersonic Cruise Trajectory Optimization Coupled with Airbreathing Vehicle Design," AIAA-2006-337, *44th ALAA Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 2006.

Starkey, Rankins, and Pines, "Coupled Waverider/Trajectory Optimization for Hypersonic Cruise," AIAA-2005-530, *43rd ALAA Aerospace Sciences Meeting and Exhibit*, Reno, NV, January 2005.

Bohorquez, Rankins, and Pines, "Hover Performance of Rotor Blades at Low Reynolds Numbers for Rotary Wing Micro Air Vehicles. An Experimental and CFD Study," AIAA-2003-3930, *21st ALAA Applied Aerodynamics Conference*, Orlando, FL, June 2003.

Rankins, and D.J. Pines, "A Relative Heat Load Comparison of Vehicles Flying Hypersonic Transatmospheric Trajectories," *Journal of Spacecraft and Rockets*, July-August 2000.

Rankins, Pines, and Carter, "An Integral Heat Load Analysis of Vehicles Flying Periodic Hypersonic Cruise Trajectories," AIAA-1999-0893, *37th ALAA Aerospace Sciences Meeting and Exhibit*, January, 1999, Reno, NV

L.vE.Rudd, Rankins, and D.J. Pines, "Moveable Cowl Control for Controlling Shock on Lip," AIAA-1998-1575, *ALAA 8th International Spaceplane and Hypersonic Systems and Technologies Conference*, April, 1998, Norfolk, VA

RESEARCH EXPERIENCE

Department of Aerospace Engineering, University of Maryland (2004 - present)
Current research explores ways to make complex optimization problems involving hypersonic vehicle and trajectory design realizable. This primarily involves improving the efficiency of the vehicle parameter modeling by using meta-modeling and developing methods for dynamically populating vehicle performance tables. The research also attempts to improve the efficiency of hybrid evolutionary optimization methods to speed the global optimization of the vehicle/trajectory design space. During the course of the current work, a 6-DOF, rotating-earth, multi-vehicle simulation code has been developed and validated for use with the optimizer.

Department of Aerospace Engineering, University of Maryland (2002 - 2004)
Began preliminary work into using overset CFD methods to model a rotary-wing micro air vehicle with a 6-inch diameter rotor. A 3-dimensional CFD model was built alongside an experimental model to determine the viability of eventually using CFD to model complex flapping and twisting motions of the rotor blades.

UniPHY Program, Hampton University (2002-2003)
Served as advisor to undergraduate student conducting engineering research as part of 6-week Undergraduate Institute in Physics summer program. Student worked on project to collect, sort, and process hypersonic computational simulation data dealing with sub-optimal low heat-load trajectories. Responsible for providing student introduction to relevant aerospace engineering topics and MATLAB, and helping student prepare final report and presentation.

Department of Aerospace Engineering, University of Maryland (1999 - 2002)
Explored the application of periodic trajectories to hypersonic cruise for reducing vehicle heat load. The work involved analytical analysis and laid the foundations of the trajectory optimization code used in the current research.

WORK EXPERIENCE

Managing Member *PRISSEM Academic Services, LLC*
Hampton, VA, 23666 (May 2007 – present)
Responsible for selecting, obtaining, and implementing all company contracts. Serve as primary grant and proposal writer. Provide engineering consulting services and data analysis. Responsible for daily operations and management of company. Develop and maintain company website.

Program Coordinator and Instructor *Young Doctors Program*
School of Science, Hampton University, Hampton, VA 23668 (summers, 2006 - 2008)
Coordinated and helped teach a five week summer enrichment program for 25-30 rising 7th and 8th grade students. The program focused on exposing students to science, engineering, technology, and mathematics topics, largely through use of professional and academic speakers and hands-on projects. Responsibilities included developing the program schedule and curriculum, arranging outside speakers, coordinating staff members and handling various logistical aspects of the program, including field trips. Also managed website used as prime advertisement/recruitment tool and served as main contact for students' parents.

Session Coordinator

School of Engineering and Technology, Hampton University

Helped coordinate activities for one-week summer program to introduce rising high school seniors to engineering. Responsibilities included arranging speakers, assisting with schedule development, leading several sessions, and helping students with their case studies, reports and presentations.

Business of Engineering

(summers, 2007 – 2008)

Lead Instructor

School of Science, Hampton University, Hampton, VA 23668

Lead teacher for a five-week summer enrichment program for 25-30 middle school students that exposed students to biology, chemistry, physics, engineering, and mathematics topics. Responsibilities included developing the program schedule and curriculum in addition to leading the majority of classroom activities.

Young Doctors Program

(summers, 2000-2005)

Student Teacher

Honors Department, Univ. of Maryland, College Park, MD 20742

As an upperclassman, helped lead a semester-long seminar concerning various research topics for freshmen honors students. Classes met 2 hours per week and were comprised of 15-20 students. Main responsibility involved leading in-depth discussions concerning reading material selected by the program organizers.

Honors Research Colloquium

(spring, 1998,1999)

COMPUTER SKILLS

Operating Systems: LINUX, Windows

Languages: FORTRAN, PHP, Microsoft VBA

Experience With: MPI/code parallelization, Fieldview, Overflow, Overgrid, DOT

Web Development: www.prissem.com, www.youngdoctors.org

PROFESSIONAL ASSOCIATIONS

American Institute of Aeronautics and Astronautics