Open Position for Ph.D. Student

FLORIDA INSTITUTE OF TECHNOLOGY
MECHANICAL & AEROSPACE ENGINEERING DEPARTMENT

Regolith Dispersion from Rocket Plume Cratering
During Lunar Landing

The Department of Mechanical and Aerospace Engineering at Florida Tech is seeking a highly-motivated, well-qualified student for a graduate assistant position leading to a Ph.D. degree in aerospace engineering. This position is funded for four years by the NASA Research Opportunities in Space and Earth Sciences (ROSES) Lunar Advanced Science and Exploration Research (LASER) program.

This project is devoted to developing a novel, integrated theoretical and numerical framework for characterizing the interaction between the rocket plume of a landing or launching lunar vehicle and the regolith. Describing this phenomenon requires extensive and detailed physical modeling of material properties, chemical reactions, particle dynamics, turbulent flow, and thermal and mechanical stresses. The present work follows existing work to describe the gas phase motion. The goal is now to describe the behavior of the ejected material after it leaves the surface, its interaction with the regolith and engine plume, and where it comes to rest. The Ph.D. candidate will develop and implement a numerical particle-laden flow model, and incorporate it into an existing coupled continuum/non-continuum gas phase flow solver. The student will also validate simulation results with data supplied by NASA.

The anticipated start date is January 2013. The selected Ph.D. student will have already earned a Masters degree (or equivalent) in aerospace engineering, mechanical engineering, or other closely related field. The student must have a comprehensive background in mathematics and compressible fluid mechanics, possess strong programming skills (preferably in C/C++ or FORTRAN), and have a basic familiarity with computational modeling. Having good writing skills is also desired. U.S. citizenship or permanent residence is required. The selected student will be eligible for full tuition benefits and a stipend. In addition to conducting research, the student’s duties will include teaching an undergraduate laboratory section or other similar responsibility. Interested students should forward a cover letter, curriculum vitae, and an advance (unofficial) copy of graduate and undergraduate transcripts to:

Dr. Mark Archambault
Florida Institute of Technology
Dept. of Mechanical and Aerospace Engineering
150 W. University Blvd.
Melbourne, FL  32901

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Any offer of funding for this position is contingent upon the student’s successful admission into Florida Tech and the department’s aerospace engineering Ph.D. program.