

JAMIN S. GREENBAUM

CURRICULUM VITA

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EDUCATION

Ph.D. Student in Geophysics, *The University of Texas at Austin*, expected December 2010

Dissertation: "Grounding line change in the Ross Sea, Antarctica." Supervisor: Dr. Ginny Catania. Understanding grounding line behavior of the major Antarctic ice streams will enable the estimation of mass loss into the world's oceans and the possibility of global sea level change. After supporting related fieldwork in Greenland in April and May 2007, I will collect data in Antarctica in November and December that will be used in my dissertation. Ice-penetrating radar data will be used in conjunction with data from spacecraft. Began coursework in August 2006.

M.S. in Aerospace Engineering, *The University of Texas at Austin*, awarded in December 2006

Thesis Title: "Flight Unit Fabrication of a University Nanosatellite: The FASTRAC Experience."

Supervisor: Dr. E. Glenn Lightsey, GPA: 3.66/4.0

My research involved the physical and system-level design and fabrication of the FASTRAC student-built satellite program. This included serving as the Student Project Manager of the program from April 2005 to January 2007 during which the design was finalized and the satellites were fabricated, integrated and delivered to the Air Force Research Laboratory in Albuquerque, New Mexico. On a volunteer-basis, I am currently supporting environmental testing of the two satellites as well as development of the mission operations plan that will be used after launch. The FASTRAC satellites are the first to be built by students at the University of Texas.

B.S. in Aerospace Engineering, *The University of Texas at Austin*, May 2004

PROFESSIONAL EXPERIENCE

Graduate Research Assistant, Institute for Geophysics, University of Texas at Austin, January 2007 – Present

Assisting Dr. Ginny Catania with physical modifications to the UT Austin ground-based ice penetrating radar equipment and the design of a 10m deep temperature probe. Also responsible for the implementation of 2D and 3D radar data migration that will be used to process grid radar data from Greenland. I will be accompanying Dr. Catania in Greenland in April, 2007.

Graduate Research Assistant, Department of Aerospace Engineering, August 2006 – December 2007

Sponsored by the Air Force Research Laboratory Consortium for Autonomous Space Systems project entitled: "Concept of Operations Design for Small Satellite Missions." Using the FASTRAC Nanosatellite Mission as a case study, I developed an approach for concept of operations planning for small satellites.

Air Force Research Laboratory, Kirtland Air Force Base, New Mexico, *Space Scholar*, June, 2006 – August, 2006

Supported inspection and initiated environmental testing of the two FASTRAC satellites that were delivered to AFRL from the University of Texas. Trained AFRL personnel in the operation of the satellites, produced significant procedure documentation, and supported several partial re-integration tasks.

Graduate Research Assistant, Department of Aerospace Engineering, January 2005 – May 2006

Sponsored by the College of Engineering, The University of Texas at Austin
Appointed specifically to complete fabrication and integration of the FASTRAC satellites.

Graduate Research Assistant, Department of Aerospace Engineering, August 2005 – December 2005

Sponsored by the Institute for Advanced Technology, The University of Texas at Austin
Analyzed the use of differential GPS systems using receivers identical to those on the FASTRAC satellites.

Graduate Research Assistant, Department of Aerospace Engineering, January 2005 – May 2005

Sponsored by the National Aeronautics and Space Administration
Appointment to analyze the design requirements for the construction of a nanosatellite beacon in orbit at Mars. The beacon would be used for navigation support of a possible Mars Sample Return mission in the next decade.

NASA Jet Propulsion Laboratory, Pasadena, California

Co-op Student, June 2003 – August 2003

Performed launch navigation of the SIRTIF/Spitzer Space Telescope using a new Perl-Script software approach; supported routine orbit determination for the Chandra X-Ray Observatory; trained others to use the scripting navigation approach. Generated Deep Space Network antenna usage requirements for the Space Interferometry Mission (anticipated 2009 launch date).

NASA Jet Propulsion Laboratory, Pasadena, California

Co-op Student, June 2002 – August 2002

Conditioned navigation data for an experimental process using non-coherent two-way Doppler data in support of the Comet Nucleus Tour launch and early orbit phase. Extensive exposure to NASA's Deep Space Network radiometric data processing.

NASA Jet Propulsion Laboratory, Pasadena, California

Co-op Student, August 2001 – December 2001

Supported the detailed design of the Mars Exploration Rover solar panels. Designed and executed tests to determine the yield point of the panel hinge area for various hardware designs. Designed a mass model of the solar panel hinge actuator used for dynamic testing. The Mars Rovers are still operating on the surface of Mars.

NASA Jet Propulsion Laboratory, Pasadena, California

Co-op Student, June 2001 – August 2001

Supported launch navigation for the Genesis solar particle collector mission. The mission was complete in September 2004 when the spacecraft returned to Earth and landed in the Utah desert.

NASA Jet Propulsion Laboratory, Pasadena, California

Co-op Student, June 2000 – December 2000

Supported the navigation team for the Near Earth Asteroid Rendezvous Mission to asteroid Eros. Extensive exposure to Orbit Determination methods for deep space navigation. The mission was complete after the spacecraft successfully landed on the asteroid in February 2001.

TEACHING EXPERIENCE

Teaching Assistant, Department of Aerospace Engineering, August 2004 – December 2004

Assisted instruction for a senior-level course in spacecraft dynamics and attitude-determination. Held office hours, study sessions, and graded all assignments. Also assisted in a senior-level design course with responsibilities ranging from guest lecturing to group mentorship and advising.

SELECTED ACADEMIC RESEARCH EXPERIENCE

FASTRAC Student-Built Satellite Program

Student Project Manager, April 2005 – January 2007

Systems Engineer, June 2003 – April 2005

NASA KC-135 Reduced Gravity Student Flight Opportunities Program

“Nanosatellite Separation and Initial Condition Analysis in six Degrees of Freedom”

Project Manager, August 2003 – May 2004

Designed and flew a test platform to simulate the beginning of the FASTRAC mission on the NASA KC-135 microgravity research airplane. One satellite was equipped with a six degree-of-freedom inertial measurement unit and an RF transceiver was used to wirelessly transmit all data to a nearby laptop during multiple zero-gravity parabolic arcs. Data indicates an on-orbit crosslink mission of approximately two weeks following nanosatellite separation before loss of inter-satellite communication.

NASA KC-135 Reduced Gravity Student Flight Opportunities Program

“The Effects of Buoyancy on an Acoustically Forced, Non-Premixed, Laminar, Jet-Diffusion Flame”

Project Manager, August 2001 – May 2003

Designed and constructed a compact and highly-capable flame diagnostic platform to record luminosity and schlieren density gradient information of a small flame under the influence of a repeatable forcing input. Integrated multiple redundant safety features for use on NASA's KC-135 aircraft. Our team flew this experiment on two consecutive campaigns on a total of eighty four parabolic arcs.

PUBLICATIONS

Diaz-Aguado M. and J. Greenbaum, "Small Satellite Thermal Design," The International Society for Optical Engineering (SPIE) Defense and Security Symposium, Orlando, Florida, April 2006.

Holt G., S. Stewart, J. Mauldin, T. Campbell, P. Eckhoff, H. Esmasri, B. Evans, M. Garg, J. Greenbaum, et al, "Relative Navigation, Microdischarge Plasma Thruster, and Distributed Communications Experiments on the FASTRAC Mission," 17th Annual American Institute of Aeronautics and Astronautics (AIAA) and Utah State University (USU) Conference on Small Satellites, August 2003.

J. Greenbaum, A review of "Lessons We Never Learn," a presentation concerning NASA and large contracts involving the U.S. Space Program. Presented by Dr. Humboldt C. Mandell, the former manager of the NASA Mars/Moon Exploration Program. NASA PM Perspectives Web-Based magazine, NASA Conference on Project Management, March 2006.

<http://pmperspectives.gsfc.nasa.gov/lessons.htm>

PRESENTATIONS

Lightsey, E. G., Greenbaum, J., Campbell, T., "Advancing Space Formations with Student-Built Satellites," Air Force Research Laboratory 1st Annual Nanosatellite Colloquium, February 2006.

Greenbaum, J., Campbell, T., "Technical exhibit of the FASTRAC satellite project," American Astronautical Society (AAS) Guidance and Control Conference 29th Annual, February 2006.

ACTIVITIES AND SERVICE

Citizens for Space Exploration D.C. Trip

Nominated Texas Student Representative, June, 2005 – May, 2006

Spoke extensively with congressional offices about NASA and the direction of the space program. Nominated the first year by the NASA Reduced Gravity Student Flight Opportunities Program and directly invited the second year by the Citizens for Space Exploration planning committee.

The Friar Society

President/Abbot, fall 2006 semester

Centennial Teaching Fellowship Co-Chair, spring 2006 semester

Organized the selection of new honorees and hosted an 80-person initiation banquet and alumni reception.

The Tejas Club

Vice President, spring 2004 semester

Organized weekly University-wide, multi-disciplinary lectures by guests from the greater Austin community.

Sigma Gamma Tau, Aerospace Engineering Honor Society

President, fall 2003 semester

Organized technical lectures by distinguished speakers and oversaw the selection and membership process.

American Institute of Aeronautics and Astronautics UT Chapter

President, spring 1999 semester

Organized chapter activities and meetings.