

Paul N. Giuliano

CONTACT INFORMATION

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CITIZENSHIP: USA

RESEARCH INTERESTS

Computational plasma science and engineering, applied to space propulsion, space physics, fusion energy, and other multi-scale problems.

EDUCATION

University of Michigan, Ann Arbor, Michigan USA

Ph.D., Aerospace Engineering (expected graduation date: May 2012)

- Advisor: Professor Iain D. Boyd
- Member of the *Nonequilibrium Gas and Plasma Dynamics Laboratory*

M.S.E., Aerospace Engineering, May 2010 GPA: 7.466

University of Southern California, Los Angeles, California USA

B.S., Astronautical Engineering, May 2008 GPA: 3.509

- *Cum Laude*, Minor in Italian
- *Order of Troy*

For graduating seniors who have demonstrated extraordinary service and dedication to the University of Southern California's campus community.

- *Discovery Scholar*

Honoring students who excel in the classroom while demonstrating the ability to create exceptional new scholarship or artistic works.

- *Renaissance Scholar*

Honoring students whose majors and minors are from widely separated fields of study, displaying broad interests.

HONORS & AWARDS

University of Michigan College of Engineering

- Order of the Engineer, 2009
- *Sigma Gamma Tau* Honor Society, initiated 2008

National Science Foundation

- Graduate Research Fellowship Honorable Mention, 2008

University of Southern California

Division of Astronautical Engineering

– Astronautics Faculty Award for Student Achievement and Initiative, 2008

Viterbi School of Engineering

– Merit Research Scholarship, 2004–2008

– Dean's List, 2005–2008

- Presidential Scholar Award, 2004–2008
- Rose Hills Foundation Research Fellowship, 2007–2008
- *Gamma Sigma Alpha* Honor Society, initiated 2006
- *Order of Omega* Honor Society, initiated 2005

Order Sons of Italy in America

- National Scholarship for Excellence, 2004

RESEARCH &
WORK
EXPERIENCE

University of Michigan, Ann Arbor, Michigan USA

Nonequilibrium Gas and Plasma Dynamics Laboratory (NGPDL)

Graduate Student Research Assistant (GSRA)

2008–Present

- Part of the Michigan/AFRL Center of Excellence in Electric Propulsion (MACEEP).
- Researching as part of the Modeling and Simulation team to support the advanced propulsion thrust areas.

Princeton University, Princeton, New Jersey USA

Electric Propulsion and Plasma Dynamics Laboratory (EPPDyL)

Summer Research Student

Summer 2007

- Accepted into the Research Experience for Undergraduates (REU) where I designed and carried out my own research experiment a high power magnetoplasmadynamic thruster.
- Made historically first experimental observations regarding the relationship of anode spot explosion with “onset” phenomena.

Caltech/NASA-JPL, Los Angeles, California USA

Advanced Propulsion Group

Summer Undergraduate Research Fellow

Summer 2006

- Accepted into the Advanced Propulsion Group where I assisted with the thermal development test of the NASA Evolutionary Xenon Thruster (NEXT).
- Gained hands-on experience in advanced vacuum systems, heat transfer mechanisms, and electric propulsion systems.

University of Southern California, Los Angeles, California USA

Space Propulsion Laboratory

Merit Research Scholar

2004–2008

- Employed by (then) Ph.D. candidate Ryan Downey as research assistant involving multi-channel hollow cathodes for application in plasma thrusters.
- Assisted in experimental facility design in addition to LabVIEW and data acquisition systems, Solid Edge modeling of electrodes, and general plasma diagnostic techniques.
- Performed Langmuir probe driven plasma diagnostics for the USC Senior Design Project.

Rocket Propulsion Laboratory (RPL)

Laboratory Manager & Founding Member

2005–2007

- Oversaw all laboratory infrastructure construction as Lab Manager in first year of existence and was the primary source for communication and purchasing with vendors.
- Worked with the team to complete full-sized curing oven and tube-wrapping mechanisms in order to fabricate carbon composite parts for the first rocket, “Del Carbon”.

Lunar Lander Prototype Vehicle Team (LEAPFROG)

Integration Specialist Team Leader

2006–2007

- Oversaw laboratory work and integration in order to lead team through specialized tasks involving structures and fabrication.
- Managed laboratory infrastructure for all subsystem teams and mediated between facilities.

Division of Astronautical Engineering

Grader

Spring 2007

- Graded weekly astronautics and space environment assignments (ASTE 280).

CONSULTING
EXPERIENCE

American Cherry, LLC, Los Angeles, California USA

Technical Consultant

2007–2008

- American Cherry provides a source of simple, durable, and affordable party games designed and developed by college students.
- Provided technical direction and initial design for an electronic game played by a group of people. Design included full CAD of all parts and electronic circuit board complete with microcontroller and display.

“**For All Mankind**”, Los Angeles, California USA

Written & Directed by Dan Clifton of Onset Films, Top Right Corner

Scientific Consultant

Released March 2009

- This magnificent short film is about Johnny Red, a boy who always wanted to be a scientist and work for NASA and so decides to build a time machine.
- Provided scientific consulting regarding the manipulation of theoretical physics to provide for a “backwards” time shift using the theories of special relativity.

PUBLICATIONS	R. Downey, P. Giuliano, K. Goodfellow, D. Erwin. Single Channel Hollow Cathodes in 5-20eV Argon Discharge. <i>IEEE Transactions on Plasma Science</i> . 2010. Submitted.
CONFERENCE PUBLICATIONS	Giuliano, P.N. and Boyd, I.D. Spectral analysis of simulated Hall thruster discharge current oscillations. <i>31st International Electric Propulsion Conference</i> , Ann Arbor, MI. September 2009. IEPC Paper 2009-084. P. Giuliano, R. Downey, and D. Erwin. Compact Facility Design for High-Current Single Channel Hollow Cathode Discharge at USC. <i>43rd AIAA Joint Propulsion Conference</i> , Cincinnati, OH. July 2007. Young Professionals Presentation. M.L. Hendry, K. Rojdev, J. Cheng, O. Faghfoor, A. Garcia, P. Giuliano, L. Hoag, C. Raskin, M. Rudolph, and O. Rahman. LEAPFROG: Lunar Entry and Approach Platform For Research On Ground. <i>AIAA InfoTech Aerospace 2007 Conference and Exhibit</i> , Rohnert Park, CA. May, 2007. AIAA Paper 2007-2764.
ACADEMIC PRESENTATIONS	P. Giuliano, L. Uribarri and E.Y. Choueiri. Research in the “Onset” Phenomenon of Magnetoplasmadynamic Thrusters: The Explosive Formation of Anode Spots. <i>Princeton REU Presentation</i> , Princeton, NJ. 2007. P. Giuliano and C. Marrese-Reading. NEXT (NASA Evolutionary Xenon Thruster) Thermal Development Test: Construction of an Environmental Heat Flux Sensor and Model. <i>Caltech SURF Presentation</i> , Pasadena, CA. 2006.
SERVICE	Officer, Libertarian Party of Washtenaw County, 2009–Present Alumni Advisor (“BB”), Delta Chi Fraternity, Michigan Chapter, 2008–Present County Coordinator, Campaign for Liberty, Washtenaw County, Michigan, 2009–Present Chair, Politics & Law Committee, UM Students for the Exploration and Development of Space (SEDS), 2010 Member, UM Aerospace Graduate Student Advisory Committee (GSAC), 2010 Vice President of Communications, USC Interfraternity Council (IFC), 2007
LANGUAGES	English (fluent), Italian (basic)
REFERENCES	Iain D. Boyd, Ph.D., iainboyd@umich.edu – <i>Current Advisor</i> Ryan T. Downey, Ph.D., ryantdowney@gmail.com – <i>Past co-worker/mentor</i> Dan A. Erwin, Ph.D., erwin@usc.edu – <i>Past Advisor</i>