

RANDY RUCH

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EDUCATION

Georgia Institute of Technology Doctor of Philosophy (Ph.D.), Planetary and Space Physics Advisor: Dr. Sven Simon	<i>August 2023 - Present</i> Expected Graduation: May 2028 GPA: 4.0
Georgia Institute of Technology B.S., Physics, Concentration: Astrophysics	<i>August 2018 - May 2023</i> GPA: 3.94

POSITIONS HELD

Georgia Institute of Technology, School of Earth and Atmospheric Sciences Atlanta, GA <i>Graduate Research Assistant, Center for Relativistic Astrophysics</i>	<i>August 2023 - Present</i>
<ul style="list-style-type: none">Developed a parallelized computational model (Python) for studying energetic heliospheric ion dynamics through regions of non-uniform electromagnetic fieldsImplemented this model at Pluto to investigate the influence of its nearby electromagnetic environment on the distribution of energetic heliospheric ionsApplied a hybrid plasma simulation tool to model Pluto's induced magnetosphere, resulting from the interaction of the impinging solar wind with Pluto's neutral atmosphere	

Georgia Institute of Technology, School of Earth and Atmospheric Sciences Atlanta, GA <i>Undergraduate Research Assistant, Center for Relativistic Astrophysics</i>	<i>Spring 2023</i>
<ul style="list-style-type: none">Studied computational methods in space plasma physics with Dr. Sven SimonApplied studies to the Jovian magnetosphere to simulate ion dynamics in different magnetic field configurations	

PUBLICATIONS

Dynamics of Energetic Heliospheric Ions in Pluto's Induced Magnetosphere
R. Ruch, S. Simon, and C. M. Haynes, *J. Geophys. Res. (Space Physics)*, 130, e2024JA033548, doi: 10.1029/2024JA033548, 2025

PRESENTATIONS

***R. Ruch**, C. M. Haynes, and S. Simon. **Energetic Ion Dynamics in Pluto's Induced Magnetosphere**. *AGU Fall Meeting*, Washington, D.C., USA, 9-13 December, 2024.

***R. Ruch**, S. Simon, and C. M. Haynes. **Energetic Ion Dynamics in Pluto's Induced Magnetosphere**. *EuroPlanet Science Congress*, Berlin, Germany, 8-13 September, 2024.

R. Ruch, P. Addison, T. Tippens, C. M. Haynes, P. Kollmann, S. Simon, and A. Stahl. **Model of Pluto's Induced Magnetosphere and its Interaction with Energetic Heliospheric Ions**. *AGU Fall Meeting*, San Francisco, USA, 11-15 December, 2023.

(*): Oral presentation

HONORS AND AWARDS

Best Paper Award: School of Earth and Atmospheric Sciences:	<i>March 2025</i>
Awarded to a student for the best refereed paper or series of refereed papers, published or accepted for publication by the time of selection, for which the student is the first author. Includes a \$1500 award	
President's Undergraduate Research Award (PURA):	<i>January 2023</i>
Awarded to competitive research prospects within their first two years as undergraduates at Georgia Tech. Includes a \$1500 salary award to fund a semester of original research	
Dean's List:	<i>Fall 2019 - May 2023</i>
Awarded to any undergraduate student with a GPA greater than 3.0	
Highest Honors:	<i>Fall 2019 - May 2023</i>
Awarded to undergraduate students with a GPA greater than 3.55	

TEACHING

Advanced Space Plasma Physics	<i>Atlanta, GA</i>
<i>Graduate Teaching Assistant</i>	<i>Spring 2024</i>
● Graduate-level course on the theoretical framework of advanced plasma physics	
● Topics include kinetic plasma theory, multi-fluid and magnetohydrodynamic treatments, cold plasma waves, shocks and discontinuities, planetary plasma interactions, and magnetospheric topology	

PROFESSIONAL REFERENCES

Sven Simon, Professor	<i>Ph.D. Advisor</i>
School of Earth and Atmospheric Sciences, Georgia Institute of Technology	
Email: sven.simon@eas.gatech.edu	
Phone: (404) 385-1509	
Website: https://svensimon.gatech.edu/	