Daniel Tamayo

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Citizenship: U.S.A., Spain

Professional Experience

2014-Present Postdoctoral Fellow University of Toronto	Centre for Planetary Sciences Canadian Institute for Theoretical Astrophysics
2008-2014 Cornell University Ithaca, NY, USA	Ph.D.: Astronomy & Space Science Minor Concentration: Physics GPA: 4.0 Advisors: Joseph A. Burns and Philip D. Nicholson
2005 University of Michigan Ann Arbor, MI, USA	B.S. Physics B.S. Mathematical Physics B.S. Philosophy

Fellowships and Awards (Research)

Jeffrey L. Bishop Fellowship (Canadian Institute for Theoretical Astrophysics) 2015
Awarded every two years for excellence in research in astrophysical dynamics.
Z. Carter Patten Graduate Fellowship in Astronomy 2013
NASA Space Grant Fellowship 2013
AAS Division of Dynamical Astronomy Student Stipend Award 2010
Cornell University First Year Fellowship 2008

Fellowships and Awards (Teaching)

Knight Award for Writing Exercises, Cornell Knight Institute 2014
Awarded to the best writing exercise across first-year writing seminars at Cornell
Buttrick-Crippen Fellowship, Cornell Knight Institute 2013-2014
One of two awarded across all Cornell depts to teach a proposed first-year writing seminar
Outstanding Teaching Assistant Award, Cornell University Dept of Astronomy 2010
One awarded yearly

Research Grants Awarded

Collaborator: Understanding Free Normal Modes 2015
and Irregular Structures on the Edges of Saturn's Rings. ($114,140)
Science PI: Galactic Background Calibrations for OT1_ddan01_1 ($20,300) 2011
Herschel Space Observatory Open Time Proposals Rd 2 *(Obs. not executed)*
Science PI: Detecting the Largest Rings in the Solar System— 2010
Dust Rings from the Irregular Satellites ($60,200)
Herschel Space Observatory Open Time Proposals Rd 1

Mentoring

Graduate Students		
Ari Silburt	A hybrid integrator for simulating close encounters.	2015-pres.
Alysa Obertas	Stability of tightly packed planetary systems.	2015-2016.
Ryan Cloutier	Retention of satellites during close planetary encounters.	2014-2015.
Undergraduate Students		
Jahnavi Shah	Modeling debris disks from colliding satellites.	2016-pres.
Christopher Simbulan	Explaining the observed exoplanet distribution. *Awarded $2500 Smith Solis Scholarship for outstanding undergraduate research.*	2015-2016
Morgan Bennett	Orbital stability of multi-planet Kepler systems. *Now a graduate student at the University of Toronto.*	2015
Alice Chen	Stability of orbital resonances under planet-disk interactions.	2015
Caden Armstrong	Photometric signatures of exoplanetary rings. *Now a software engineer for University of Toronto Libraries.*	2015
Pengshuai (Sam) Shi	Adding general relativity corrections to N-body simulations. *Now pursuing an MSc at Ryerson University in data science.*	2015-2016
Sunny-Sum Chen	Chaos indicators in simulations of planetary systems.	2014
Stephen Markham	Extracting the Phoebe ring's radial structure using observations at Saturn from the Cassini spacecraft. *Now a graduate student at Caltech.*	2013-2015
Heming Ge	Developing software for visualizing dynamical simulations. *Now a software engineer at Google.*	2013
High School Students		
	Mentored 6 rural students to regional science fair (Namibia)	2007

Academic Service

Planetary Junior Visitor Coordinator	2015-pres.
Planetary Lunch Coordinator	2014-pres.
NASA Proposal Review Panelist	2014-pres.
Manuscript Referee, *Astrophysical Journal, Icarus, MNRAS*	2012-pres.
President, Astronomy Grads Network, *Cornell University*	2010-2012

Teaching Training

Writing 7100: Teaching Writing, *Cornell University*	2013
ALS 6015: Teaching in Higher Education, *Cornell University*	2012
Center for Astronomy Education Teaching Excellence Workshop, *PSU, PA*	2011
Writing 7101: Writing in the Majors, *Cornell University*	2009

Teaching

U. of Toronto Scarborough, ON	Co-Organized and Taught Monthly Machine Learning Workshop: *Attended by Undergraduates, Graduate Students, Postdocs and Faculty.*	2016
Cornell Astronomy Dept. Ithaca, NY	Designed and Taught First-Year Writing Seminar: *Are We Alone in the Universe?* (Buttrick-Crippen Fellowship)	2014
	Teaching Assistant, ASTRO 1102, *Our Solar System*	2011
	Designed and Taught 5-week middle-school science course: *Figuring Out Our Place in the Universe!*	2011
	Head Teaching Assistant, ASTRO 1101, *Nature of the Universe*	2010
	Teaching Assistant, ASTRO 1102, *Our Solar System*	2010
	Designed and Taught 5-week middle-school science course: *Mind-Blowing Science–From Relativity to Alien Biology*	2009
	Teaching Assistant, ASTRO 2201, *The History of the Universe*	2009
Peace Corps Otjimbingwe Namibia	Mathematics Teacher (Grades 8-10) Physical Science Teacher (Grades 8-9) Founded Computer Lab & Chess Club Renovated School Library	2005-2007
Princeton Review Ann Arbor, MI	Math, Science, Reading and English Teacher for ACT Test	2003-2005

Outreach

Delivered public / science literacy talks 2015-2016
Toronto Public Library System

Co-Organized Lunar Eclipse Public Event ($\sim$ 500 people) 2015
University of Toronto at Scarborough

Reviewed Neal Stephenson novel Seveneves 2015
Science Vol 348, 6241, pp. 1310-1311

Organized Astro Career Day (2-day event for 80 local middle-school students) 2014
Cornell Department of Astronomy, Ithaca NY

Organized Museum in the Dark (Astronomy Halloween Event $\sim$ 100 children) 2011
Museum of the Earth, Ithaca, NY

Co-Started Ask An Astronomer At Cornell Podcast 2011-2014
Cornell Department of Astronomy, Ithaca NY

Taught Figuring out our Place in the Universe!, (5-week course) 2011
Russell I. Doig Middle School, Trumansburg, NY

Organized a book drive to send astronomy materials to a planetarium in Ghana 2010
Gathered and shipped over 100 textbooks

Taught Mind-blowing Science—from Relativity to Alien Biology 2009
Cascadilla High School, Ithaca, NY (5-week course)

Co-Organized Observe the Moon Night ($>$ 300 children and families) 2009
Fuertes Observatory, Ithaca, NY

Fielded weekly questions Curious about Astronomy? ($\sim 3 \times 10^6$ viewers / yr) 2008-2014
Cornell Department of Astronomy, Ithaca NY

Led or Co-Led $\sim$ 10 Workshops for Department-Hosted Outreach Events 2008-2014
Cornell Department of Astronomy, Ithaca NY

Refereed Publications

16	**Tamayo, D.**, Silburt, A.*, et al. A Machine Learns to Predict the Stability of Tightly Packed Planetary Systems., *Astrophysical Journal Letters*, Vol. 832.2. (link)	2016
15	Rein, H., **Tamayo, D.**. A new paradigm for reproducing and analyzing N-body simulations., *Submitted to Monthly Notices of the Royal Astronomical Society.* (link)	2016
14	Simbulan, C.*, **Tamayo, D.**, Petrovich, C., Rein, H., Murray, N. Connecting the HL Tau System to the Observed Exoplanet Population., *Submitted to Monthly Notices of the Royal Astronomical Society.* (link)	2016
13	Silburt, A.*, Rein, H., **Tamayo, D.**. HERMES: A Hybrid Integrator for Simulating Close Encounters and Planetesimal Migration., *Submitted to Monthly Notices of the Royal Astronomical Society.* (link)	2016
12	Obertas, A.*, van Laerhoven, C., **Tamayo, D.**. The stability of tightly-packed and evenly-spaced planetary systems, *Submitted to Icarus.* (link)	2016
11	**Tamayo, D.**, Markham, S.R.*, Hedman, M.M, Burns, J.A., Radial profiles of the Phoebe ring: A vast debris disk around Saturn. *Icarus*, Vol. 275, p. 117-131. (link)	2016
10	Rein, H., **Tamayo, D.**. Second-order Variational Equations for N-body Simulations. *Monthly Notices of the Royal Astronomical Society*, Vol. 459.3 p. 2275-2285. (link)	2016
9	Kostov, V.B., Moore, K.*, **Tamayo, D.**, Jayawardhana, R., Rinehart, S.A. Tatooine's Future: The Eccentric Response of Kepler's Circumbinary Planets to Common-Envelope Evolution of Their Host Stars, *Astrophysical Journal*, Vol 832.2. (link)	2016
8	Cloutier, R*., **Tamayo, D.**, Valencia, D., Could Jupiter or Saturn Have Ejected a fifth giant planet?. *Astrophysical Journal*, Vol. 813.1. (link)	2015
7	Rein, H., **Tamayo, D.** WHFAST: A fast and unbiased implementation of a symplectic Wisdom-Holman integrator for long-term gravitational simulations. *Monthly Notices of the Royal Astronomical Society*, Vol. 452.1 p. 376-388. (link)	2015
6	**Tamayo, D.**, Triaud, A.H.M.J., Menou, K., Rein, H. Dynamical Stability of Imaged Planetary Systems in Formation: Application to HL Tau. *Astrophysical Journal*, Vol. 805 (2), 100. (link)	2015
5	**Tamayo, D.**, Hedman, M.M., Burns, J.A. First Observations of the Phoebe Ring in Optical Light. *Icarus*, Vol. 233, p. 1-8. (link)	2014
4	**Tamayo, D.** Consequences of an Eccentric Orbit for Fomalhaut b. *Monthly Notices of the Royal Astronomical Society*, Vol. 438, Issue 4, p. 3577-3586. (link)	2014
3	**Tamayo, D.**, Burns, J.A., Hamilton, D.P. Chaotic Dust Dynamics and Implications for the Hemispherical Color Asymmetries of the Uranian Satellites. *Icarus*, Vol. 226, Issue 1, p. 655-662. (link)	2013
2	**Tamayo, D.**, Burns, J.A., Hamilton, D.P., Nicholson, P.D. Dynamical Instabilities in High-Obliquity Systems. *Astronomical Journal*, Vol. 145, Issue 3, id. 54, 12 pp. (link)	2013
1	**Tamayo, D.**, Burns, J.A., Hamilton, D.P., Hedman, M.M. Finding the Trigger to Iapetus' Odd Global Albedo Pattern: Dynamics of Dust from Saturn's Irregular Satellites. *Icarus*, Volume 215, Issue 1, p. 260-278. (link)	2011

* Student