JASON DANIEL HOFGARTNER – CURRICULUM VITAE

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Last updated: September 15, 2020

EDUCATION

Ph.D. 2016
Cornell University, Astronomy, Minor in Earth and Atmospheric Sciences
Thesis Title: Dynamic Phenomena in the Lakes and Seas of Titan
Thesis Advisor: Jonathan I. Lunine
Thesis Co-Advisor: Alexander G. Hayes

M. S. 2014
Cornell University, Astronomy, Minor in Earth and Atmospheric Sciences

B. S. 2011
University of Waterloo, Physics, Honours, Co-operative Program
Astrophysics Specialization, French Language I Certificate

ACADEMIC AWARDS AND FELLOWSHIPS

Jet Propulsion Laboratory
- Voyager Award, Scientific Leadership 2020
- Team Award, Discovery Trident Science Team 2020

NASA
- Group Achievement Award, Cassini Radar Science and Operations Team 2018
- Small Bodies Assessment Group, Early Career Participant Travel Grant 2018
- Outer Planets Assessment Group, Early Career Participant Travel Grant 2017
- Group Achievement Award, New Horizons Team 2017
- Postdoctoral Program Fellowship, Jet Propulsion Laboratory 2016 - 2019

Titan Surface Meeting in Paris, France, Early Career Travel Grant 2016
Cornell University, Cranson and Edna B. Shelley Graduate Research Award 2015
American Geophysical Union Outstanding Student Paper Award 2014
Natural Sciences and Engineering Research Council of Canada
- Post Graduate Scholarship Doctoral 2012 - 2015
- Post Graduate Scholarship Master's 2011 - 2012

Ontario Graduate Scholarship (declined in favor of Cornell University) 2011
University of Waterloo
- Helen Sawyer Hogg Scholarship in Astronomy 2011
- Ian R. Dagg Memorial Scholarship 2010
- President's Research Award 2010

Mike Lazaridis Scholarship in Theoretical Physics	2010
J. W. Leech Physics Book Prize	2009
C. C. Lim Physics Book Prize	2008
President's International Experience Award	2007
Don E. Brodie Scholarship in Science	2007
President's Scholarship of Distinction	2006

PLANETARY SCIENCE MISSION EXPERIENCE

New Horizons Mission — 2016 - present
Geology and Geophysics Investigation
Affiliate Team Member

Cassini Solstice Mission
Cassini Radar Science Team
Associate Team Member — 2015 - 2019
Graduate Student Affiliate Team Member — 2013 - 2015

Trident Proposal & Phase A Study (NASA Discovery Proposal to Triton) — 2018 - present
Co-Investigator

Europa Lander Pre-project — 2019 - present
Project Science Team Member

Oceanus Proposal (NASA New Frontiers Proposal to Titan) — 2016 - 2017
Postdoctoral Affiliate Team Member

Planetary Science Summer School, Jet Propulsion Laboratory — 2015

PROFESSIONAL EMPLOYMENT EXPERIENCE

Research Scientist — Jan. 2019 – present
NASA Jet Propulsion Laboratory, Pasadena, California, USA

NASA Postdoctoral Program Fellow — Jan. 2016 – Jan. 2019
NASA Jet Propulsion Laboratory, Pasadena, California, USA

Mike Lazaridis Physics Research Assistant — May - Aug. 2010
Perimeter Institute, Waterloo, Ontario, Canada
Report: Probability of Slow-roll Inflation from the Canonical Measure

Physics Research Assistant — Sep. - Dec. 2009
SNOLAB, Sudbury, Ontario, Canada
Report: Evaluation of Pulse-shape Discrimination with the DEAP-1 Dark Matter Detector at SNOLAB

Geophysical Data Processor — Sep. 2008 - Apr. 2009
Sander Geophysics, Ottawa, Ontario, Canada and United Arab Emirates (field site)

Report: Analyzing Repeatability in Airborne Magnetic Geophysics using Accidental Re-flight Data
Report: Determining the Most Accurate Method to Differentially Locate Reference Stations

Junior Project Officer Jan. - Apr. 2008
Health Canada, Ottawa, Ontario, Canada
Report: Principal Components Analysis of the Canadian Pesticide Risk Indicator Environmental Module

ACADEMIC TEACHING AND MENTORING EXPERIENCE

NASA Jet Propulsion Laboratory
Research mentor for summer undergraduate intern, Mason MacDougall 2018
Research mentor for undergraduate intern, Spencer Devins 2016 – 2017

Cornell University, Astronomy
Guest Lecturer (9 times) 2012 - 2015
Lead Teaching Assistant, Our Solar System - Astronomy 1102/1104 2013
Teaching Assistant, The Nature of the Universe - Astronomy 1101/1103 2012

PEER-REVIEWED PUBLICATIONS

26. **J. D. Hofgartner**, A. G. Hayes, D. B. Campbell, J. I. Lunine, G. J. Black, S. M. MacKenzie, S. P. D. Birch, C. Elachi, R. D. Kirk, A. Le Gall, R. D. Lorenz, S. D. Wall, The Root of Anomalously Specular Reflections from Solid Surfaces on Saturn's Moon Titan, *Nature Communications* **11**, 2829, 2020.

25. **J. D. Hofgartner**, B. J. Buratti, S. D. Benecchi, R. A. Beyer, A. Cheng, J. T. Keane, T. R. Lauer, C. B. Olkin, J. W. Parker, K. N. Singer, J. R. Spencer, S. A. Stern, A. J. Verbiscer, H. A. Weaver, New Horizons Geology and Geophysics Team, and New Horizons LORRI Team, Photometry of Kuiper Belt Object (486958) 2014 MU69 from New Horizons LORRI, *Icarus*, in press

24. J. R. Spencer, and 77 co-authors including **J. D. Hofgartner**, The Geology and Geophysics of Kuiper Belt Object (486958) 2014 MU69, *Science,* aay3999, 2020

23. R. Lopes, and 47 co-authors including **J. D. Hofgartner**, Titan as Revealed by the Cassini RADAR, *Space Science Reviews* **215**, 33, 2019

22. S. A. Stern, and 204 co-authors including **J. D. Hofgartner**, Initial results from the first spacecraft exploration of a small Kuiper Belt Object: 2014 MU_{69}, *Science* **364**, eaaw9771, 2019

21. B. J. Buratti, and 17 co-authors including **J. D. Hofgartner**, *New Horizons* Photometry of Pluto's Moon Charon, *The Astrophysical Journal Letters* **874**, L3, 2019

20. S. M. MacKenzie, J. W. Barnes, **J. D. Hofgartner**, S. P. D. Birch, M. M. Hedman, A. Lucas, S. Rodriguez, E. P. Turtle, C. Sotin, The case for seasonal surface changes at Titan's lake district, *Nature Astronomy* **3**, 506-510, 2019

19. **J. D. Hofgartner**, B. J. Buratti, P. O. Hayne, L. A. Young, Ongoing Resurfacing of KBO Eris by Volatile Transport in Local, Collisional, Sublimation Atmosphere Regime, *Icarus* **334,** 52-61, 2019

18. S. P. D. Birch, A. G. Hayes, V. Poggiali, **J. D. Hofgartner**, J. I. Lunine, M. J. Malaska, S. Wall, R. M. C. Lopes, O. White, Raised Rims around Titan's Sharp-Edged Depressions, *Geophysical Research Letters* **46**, 5846-5854, 2018

17. S. P. D. Birch, A. G. Hayes, P. Corlies, E. R. Stofan, **J. D. Hofgartner**, R. M. C. Lopes, R. D. Lorenz, J. I. Lunine, S. M. MacKenzie, M. J. Malaska, C. A. Wood, and the Cassini RADAR Team, Morphological Evidence that Titan's Southern Hemisphere Basins are Paleoseas, *Icarus* **310,** 140-148, 2018

16. **J. D. Hofgartner**, B. J. Buratti, S. L. Devins, R. A. Beyer, P. Schenk, S. A. Stern, H. A. Weaver, C. B. Olkin, A. Cheng, K. Ennico, T. R. Lauer, J. Spencer, L. A. Young, the New Horizons Science Team, A search for temporal changes on Pluto and Charon, *Icarus* **302,** 273-284, 2018

15. A. J. Verbiscer, and 13 co-authors including **J. D. Hofgartner**, Phase Curves of Nix and Hydra from the *New Horizons* Imaging Cameras, *The Astrophysical Journal Letters* **852**, L35, 2018

14. S. Stern, J. Kammer, E. Barth, K. Singer, T. Lauer, **J. D. Hofgartner**, H. Weaver, K. Ennico, C. B. Olkin, L. Young, Evidence for Possible Clouds in Pluto's Present-day Atmosphere, *The Astronomical Journal* **154**, 43, 2017

13. C. Grima, M. Mastrogiuseppe, A. G. Hayes, S. D. Wall, R. D. Lorenz, **J. D. Hofgartner,** B. Stiles, C. Elachi, The Cassini Radar Team, Surface Roughness of Titan's Hydrocarbon Seas, *Earth and Planetary Science Letters* **474,** 20-24, 2017

12. M. J. Malaska, R. Hodyss, J. I. Lunine, A. G. Hayes, **J. D. Hofgartner,** G. Hollyday, R. D. Lorenz, Laboratory measurements of nitrogen dissolution in Titan lake fluids, *Icarus* **289,** 94-105, 2017

11. B. J. Buratti, **J. D. Hofgartner,** M. D. Hicks, H. A. Weaver, S. A. Stern, T. Momary, J. A. Mosher, R. A. Beyer, A. J. Verbiscer, A. M. Zangari, L. A. Young, C. M. Lisse, K. Singer, A. Cheng, W. Grundy, K. Ennico, C. B. Olkin, Global Albedos of Pluto and Charon from LORRI *New Horizons* Observations, *Icarus* **287,** 207-217, 2017

10. P.-A. Amaudruz, and 71 co-authors including **J. Hofgartner,** Measurement of the scintillation time spectra and pulse-shape discrimination of low-energy beta and nuclear recoils in liquid argon with DEAP-1, *Astroparticle Physics* **85,** 1-23, 2016

9. S.P.D. Birch, A.G. Hayes, W. Dietrich, A.D. Howard, C. Bristow, M.J. Malaska, J. Moore, M. Mastrogiuseppe**, J.D. Hofgartner**, D.A. Williams, O. White, J. Soderblom, J.W. Barnes, E. Turtle, J.I. Lunine, C. Wood, C. Neish, R. Kirk, E. Stofan, R. Lorenz, R.M.C. Lopes, Geomorphologic mapping of Titan's polar terrains: Constraining Surface Processes and Landscape Evolution, *Icarus* **282,** 214-236, 2017

8. V. Poggiali, M. Mastrogiuseppe, A. G. Hayes, R. Seu, S. P. D. Birch, R. Lorenz, C. Grima, **J. D. Hofgartner**, Liquid-filled Canyons on Titan, *Geophysical Research Letters* **43**, 7887-7894, 2016

7. S.M. MacKenzie, T.E. Caswell, C.M. Phillips-Lander, E.N. Stravros, **J.D. Hofgartner**, V.Z. Sun, K.E. Powell, C.J. Steuer, J.G. O'Rourke, J.K. Dhaliwal, C.W.S. Leung, E.M. Petro, J.J. Wynne, S. Phan, M. Crismani, A. Krishnamurthy, K.K. John, K. DeBruin, C.J. Budney, K.L. Mitchell, THEO Concept Mission: Testing the Habitability of Enceladus's Ocean, *Advances in Space Science Research* **58**, 1117-1137, 2016

6. M. Mastrogiuseppe, A. Hayes, V. Poggiali, R. Seu, J. Lunine, **J. D. Hofgartner**, Radar Sounding Using Cassini Altimeter: Waveform Modeling and Monte Carlo approach for Data Inversion of Observations of Titan Liquid Bodies, *Institute of Electrical and Electronics Engineers Transactions on Geoscience and Remote Sensing* **54,** 5646-5656, 2016

5. **J. D. Hofgartner**, A. G. Hayes, J. I. Lunine, H. Zebker, R. D. Lorenz, M. J. Malaska, M. Mastrogiuseppe, C. Notarnicola, J. M. Soderblom, Titan's Magic Islands: Transient Features in a Hydrocarbon Sea, *Icarus* **271,** 338-349, 2016

4. O. Mousis, J. I. Lunine, A. G. Hayes, **J. D. Hofgartner**, The fate of ethane in Titan's hydrocarbon lakes and seas, *Icarus* **270,** 37-40, 2016

3. M. Akashi-Ronquest, and 81 co-authors including **J. Hofgartner,** Improving photoelectron counting and particle identification in scintillation detectors with Bayesian techniques, *Astroparticle Physics* **65,** 40-54, 2015

2. **J. D. Hofgartner**, A. G. Hayes, J. I. Lunine, H. Zebker, B. W. Stiles, C. Sotin, J. W. Barnes, E. P. Turtle, K. H. Baines, R. H. Brown, B. J. Buratti, R. N. Clark, P. Encrenaz, R. D. Kirk, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. J. Malaska, K. L. Mitchell, P. D. Nicholson, P. Paillou, J. Radebaugh, S. D. Wall, C. Wood, The discovery of transient features in a Titan sea, *Nature Geoscience* **7,** 493-496, 2014

1. **J. D. Hofgartner**, J. I. Lunine, Does ice float in Titan's lakes and seas? *Icarus* **223,** 628-631, 2013

SUBMITTED PUBLICATIONS

P. M. Corlies, G. D. McDonald, A. G. Hayes, J. J. Wray, M. Adamkovics, M. J. Malaska, M. L. Cable, **J. D. Hofgartner**, S. Horst, L. R. Liuzzo, J. J. Buffo, R. D. Lorenz, E. Turtle, Modeling transmission windows in Titan's lower troposphere: Implications for infrared spectrometers aboard aerial and surface missions, *Icarus, in revision*

J. H. Hillier, B. J. Buratti, **J. D. Hofgartner**, M. D. Hicks, S. Devins, L. Kivrak, Characteristics of Pluto's haze and surface from an analytic radiative transfer model. *Planetary Science Journal, in revision*

BOOK CHAPTERS

M. W. Buie, **J. D. Hofgartner**, V. J. Bray, E. Lellouch, Future Exploration of the Pluto System, In: S. A. Stern (Ed) Pluto System After New Horizons. University of Arizona Press Space Science Series, University of Arizona, Tucson, *accepted*

EXTERNAL RESEARCH GRANTS

PI: NASA Solar System Workings Program (SSW) 2020-2023
Eris: The brightest (and most active?) KBO
Total Budget: ~$400,000

Co-Investigator: NASA Planetary Mission Concept Studies (PMCS) 2019-2020
Flagship Concepts for Astrobiology at Enceladus, PI: Shannon MacKenzie
Total Budget: ~$100,000

Science PI: NASA New Frontiers Data Analysis Program (NFDAP) 2019-2022
Realistic Bond albedo maps for Pluto, PI: Bonnie Buratti
Total Budget: ~$500,000

Co-Investigator: NASA New Frontiers Data Analysis Program (NFDAP) 2019-2022
Characterization and composition of Pluto's haze layer, PI: Bonnie Buratti
Total Budget: ~$400,000

SEMINARS

Arecibo Observatory, Science Seminar	2020
Green Bank Observatory, Science Seminar	2020
Jet Propulsion Laboratory, Planetary Science Colloquium (numerous)	2013-2019
University of Arizona, Lunar and Planetary Laboratory Colloquium	2017
Georgia Institute of Technology, Planetary Seminar	2016
California Institute of Technology, Dix Planetary Science Seminar	2016

University of Western Ontario, Centre for Planetary Science and Exploration Forum 2015
Southwest Research Institute, Space Science and Engineering Division Colloquium 2015
Cornell University, Astronomy Department Colloquium (numerous) 2011-2015
Colgate University, Physics and Astronomy Department Colloquium 2014
Perimeter Institute, Mike Lazaridis Scholarship Seminar 2010

CITABLE, FIRST-AUTHOR CONFERENCE ABSTRACTS

15. J. D. Hofgartner, M. Choukroun, M. Cable, J. Brophy, K. Carpenter, R. P. Casillas, A. Chmielewski, P. Cooley, J. Cutts, J. Fleurial, D. Landau, A. Parness, K. Reh, B. Wilcox, Feasibility of a Mission to Enceladus' Subsurface Ocean for the Next Planetary Science Decadal Survey, *American Geophysical Union*, San Francisco CA, Dec. 2019

14. J. D. Hofgartner, B. J. Buratti, R. A. Beyer, A. F. Cheng, C. B. Olkin, J. W. Parker, J. R. Spencer, S. A. Stern, A. J. Verbiscer, H. A. Weaver, New Horizons Geology and Geophysics Team, and New Horizons LORRI Team, Albedo Map of Kuiper Belt Object 2014 MU69 and Comparison with Cognate Solar System Objects, *European Planetary Science Congress*, Geneva Switzerland, Sep. 2019

13. J. D. Hofgartner, B. J. Buratti, M. W. Buie, V. J. Bray, E. Lellouch, Future Spacecraft Missions to the Pluto System, *Pluto System After New Horizons*, Laurel MD, Jul. 2019 **[Invited]**

12. J. D. Hofgartner, B. J. Buratti, H. A. Weaver, A. F. Cheng, C. M. Lisse, A. J. Verbiscer, R. A. Beyer, S. A. Stern, C. B. Olkin, J. R. Spencer, J. W. Parker, J. J. Kavelaars, R. P. Binzel, New Horizons Geology and Geophysics Team, and New Horizons LORRI Team, Photometry of Kuiper Belt Object Ultima Thule and Comparisons with Cognate Solar System Objects, *Lunar and Planetary Science Conference*, The Woodlands TX, Mar. 2019

11. J. D. Hofgartner, B. J. Buratti, P. O. Hayne, L. A. Young, Eris: The brightest (and most active?) Kuiper belt object, *Lunar and Planetary Science Conference*, The Woodlands TX, Mar. 2019

10. J. D. Hofgartner, A. G. Hayes, J. I. Lunine, B. W. Stiles, M. J. Malaska, S. D. Wall, Final Cassini RADAR Observation of Titan's Magic Island Region and Ligeia Mare, *American Geophysical Union*, New Orleans LA, Dec. 2017

9. J. D. Hofgartner, B. J. Buratti, S. L. Devins, R. A. Beyer, P. Schenk, S. A. Stern, H. A. Weaver, C. B. Olkin, A. Cheng, K. Ennico, T. R. Lauer, J. Spencer, L. A. Young and The New Horizons Science Team, A Search for Temporal Changes on Pluto and Charon, *American Astronomical Society Division for Planetary Sciences*, Provo UT, Oct. 2017

8. J. D. Hofgartner, B. J. Buratti, S. L. Devins, R. A. Beyer, K. Ennico, C. B. Olkin, S. A. Stern, H. A. Weaver, L. A. Young and The New Horizons Geology, Geophysics and Imaging Science Theme Team, A Search for Temporal Changes on Pluto and Charon, *American Astronomical Society Division for Planetary Sciences*, Pasadena CA, Oct. 2016

7. J. D. Hofgartner, B. J. Buratti, R. H. Brown, J. W. Barnes, C. Sotin, K. Lawrence, Erosion of Titan's Craters from Cassini RADAR and VIMS Imagery, *Lunar and Planetary Science Conference*, The Woodlands TX, Mar. 2016

6. J. D. Hofgartner, A. G. Hayes, J. I. Lunine, H. Zebker, B. W. Stiles, C. Sotin, J. W. Barnes, E. P. Turtle, K. H. Baines, R. H. Brown, B. J. Buratti, R. N. Clark, P. Encrenaz, R. D. Kirk, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. J. Malaska, K. L. Mitchell, P. D. Nicholson, P. Paillou, J. Radebaugh, S. D. Wall, C. Wood, TITAN'S MAGIC ISLAND: TRANSIENT FEATURES IN A TITAN SEA, *Lunar and Planetary Science Conference*, The Woodlands TX, Mar. 2015

5. J. D. Hofgartner, A. G. Hayes, J. I. Lunine, H. Zebker, B. W. Stiles, C. Sotin, J. W. Barnes, E. P. Turtle, K. H. Baines, R. H. Brown, B. J. Buratti, R. N. Clark, P. Encrenaz, R. D. Kirk, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. J. Malaska, K. L. Mitchell, P. D. Nicholson, P. Paillou, J. Radebaugh, S. D. Wall, C. Wood, Titan's Magic Island: Transient features in a Titan sea, *American Geophysical Union*, San Francisco CA, Dec. 2014 **[Invited]**

4. J. D. Hofgartner, D. B. Campbell, A. G. Hayes, J. I. Lunine, Specular Reflections from Titan's Equatorial Region: Solving the Decade Old Mystery, *American Geophysical Union*, San Francisco CA, Dec. 2014

3. J. D. Hofgartner, A. G. Hayes, J. I. Lunine, H. Zebker, B. W. Stiles, C. Sotin, J. W. Barnes, E. P. Turtle, K. H. Baines, R. H. Brown, B. J. Buratti, R. N. Clark, P. Encrenaz, R. D. Kirk, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. J. Malaska, K. L. Mitchell, P. D. Nicholson, P. Paillou, J. Radebaugh, S. D. Wall, C. Wood, THE CASE OF TITAN'S MYSTERIOUS NEW ISLAND: ANALYSIS OF ANOMALOUSLY BRIGHT FEATURES OBSERVED IN THE CASSINI T92 SAR PASS OVER TITAN'S LIGEIA MARE, *Lunar and Planetary Science Conference*, The Woodlands TX, Mar. 2014

2. J. D. Hofgartner and J. I. Lunine, TITAN'S METHANE CYCLE IS CLOSED, *American Geophysical Union*, San Francisco CA, Dec. 2013

1. J. D. Hofgartner, A. G. Hayes, J. I. Lunine, H. Zebker, B. W. Stiles, C. Sotin, J. W. Barnes, E. P. Turtle, K. H. Baines, R. H. Brown, B. J. Buratti, R. N. Clark, P. Encrenaz, R. D. Kirk, A. Le Gall, R. M. Lopes, R. D. Lorenz, M. J. Malaska, K. L. Mitchell, P. D. Nicholson, P. Paillou, J. Radebaugh, S. D. Wall, C. Wood, The case of Titan's mysterious new island: An analysis of an anomalously bright feature observed in the

T92 SAR pass over Ligeia Mare, *American Geophysical Union*, San Francisco CA, Dec. 2013

PROFESSIONAL SERVICE

Referee, The Astronomical Journal, Icarus (4 times), Journal of Geophysical Research – Planets	2014 - present
Reviewer, NASA Review Panel (3 times, numerous external reviews)	2016 - present
Leveler, NASA Review Panel	2015
Workshop Co-organizer, Titan Surface Workshop, Cornell University	2014
Executive Secretary, NASA Review Panel	2014
Seminar Organizer, Cornell University Planetary Lunch Seminars	2011 - 2013
Journal Club Organizer, SNOLAB Particle Astrophysics Journal Club	2009

SELECTED PUBLIC OUTREACH AND PRESS ACTIVITIES

Media interviews and Nature Research Astronomy Community blog for *The Root of Anomalously Specular Reflections from Solid Surfaces on Saturn's moon Titan*	Jun. 2020
Speaker, Cassini-Huygens Analysis and Results from the Mission (CHARM)	Apr. 2016
Cornell press release of *Titan's "Magic Islands": Transient Features in a Hydrocarbon Sea*	Mar. 2016
Rockland Astronomy Club, Annual Dinner Lecture	Mar. 2015
Jet Propulsion Laboratory press release of Cassini T104 observations of Titan's Magic Island	Sep. 2014
Nature Geoscience press release of *The discovery of transient features in a Titan sea*	Jun. 2014
Featured in more than 60 news articles and several radio broadcasts	
In the 99th percentile in metric for online attention of more than 190,000 tracked articles of a similar age in all journals	
Speaker, Cornell Friends of Astronomy	Nov. 2013
Cassini press release of *Does ice float in Titan's lakes and seas?*	Jan. 2013

ADDITIONAL QUALIFICATIONS

French (intermediate)	
Black belt in Okinawan Goju-Ryu	2011
Open Water Scuba Diver – Professional Association of Diving Instructors	2009
Standard First Aid, CPR-C, and AED certified	
Community Emergency Response Team (CERT) Trained	2018