

Ari Silburt

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EDUCATION & WORK EXPERIENCE

Postdoc, Eberly Fellow, Astrophysics 2017–present

Location: Penn State University, State College, PA, USA

Professor: Eric Ford

Data Scientist, Geotab 2017

Location: Geotab, Oakville, ON, Canada

Manager: Mike Branch

Work: Detecting potholes via machine learning from Geotab's vehicle accelerometer data.

Doctorate of Philosophy, Astrophysics 2012–2017

Location: University of Toronto, Toronto, ON, Canada

Advisor: Prof. Hanno Rein

Thesis: Statistics, Formation and Stability of Exoplanetary Systems.

Bachelor of Science, Honours Physics 2008–2012

Location: Mount Allison University, Sackville, NB, Canada

Advisor: Prof. David Hornidge

Thesis: Improvement of the Compton Beam Asymmetry.

AWARDS & HONOURS

Eberly Fellowship: Awarded to attract exceptional early career scientists to Penn State to enhance their career goals in the vibrant, highly collaborative environment. 2017–2019

NSERC PGS-D Research Grant: Graduate research award from the National Science and Engineering Research Council of Canada. 2015–2017

Walter C Sumner Fellowship: National achievement award for academics and research. 2015–2017

SGS Conference Grants: Two grants from the University of Toronto School of Graduate Studies, awarded for the purpose of presenting original research at top tier conferences. 2015, 2016

NSERC CGS-M Research Grant: Graduate research award from the National Science and Engineering Research Council of Canada. 2013–2014

Dr. R. N. Varma Memorial Award: Graduating Mount Allison University physics student with highest GPA. 2012

Donald G. MacGregor Scholarship: 3rd year Mount Allison University physics student with highest GPA. 2011

NSERC USRA Research Grant: Two Undergraduate summer research awards from the National Science and Engineering Research Council of Canada. 2010–2012

Harrison McCain Scholarship: Mount Allison University scholarship for academic excellence. 2008–2012

PUBLICATIONS

Silburt, A., Tamayo, D., Hussain, N., “*Machine Learning to Predict Orbital Stability: Applications to real planetary systems.*”, 2018, MNRAS (in prep).

Tamayo, D., Hussain, N., **Silburt, A.** “*Machine Learning to Predict Orbital Stability: Model and APF*”, 2018, MNRAS (in prep).

Silburt, A., Ali-Dib, M., et al. “*Deep Learning on the Moon*”, 2017, EAPSL (in prep).

Silburt, A., Rein, H., “*Resonant structure, formation and stability of the planetary system HD155358*”, 2017, MNRAS, 469, 4 (6pp)

Silburt, A., Rein, H., Tamayo, D., “*HERMES: A Hybrid Integrator for Simulating Close Encounters and Planetesimal Migration*”, 2016, preprint: <https://silburt.github.io/files/HERMES.pdf>

Tamayo, D., **Silburt, A.**, et al., “*A Machine Learns to Predict the Stability of Tightly Packed Planetary Systems*”, 2016, ApJL, 832, L22 (5pp)

Silburt, A., Rein, H., “*Tides Alone Cannot Explain Kepler Planets Close to 2:1 MMR*”, 2015, MNRAS, 453, 4089S (7pp)

Silburt, A., Gaidos, E., Wu, Y., “*A Statistical Reconstruction of the Planet Population Around Kepler Solar-Type Stars*”, 2015, ApJ, 790, 180S (12pp)

SCIENTIFIC TALKS AND POSTERS

Talk: “*Machine learning for predicting longterm planetary stability and crater counting on the Moon*”, Penn State University Colloquium, 2017. Location: State College, PA, USA.

Talk: “*A Hybrid Integrator for Simulating Planetesimal Migration and Close Encounters*”, Numerical Integration Methods in Planetary Sciences, 2017. Location: Toronto, ON, Canada.

Talk: “*The Formation and Stability of Kepler Planets*”, Carnegie Institute for Science, 2016. Location: Washington D.C., USA.

Talk: “*Comparing the Formation of Kepler Systems to the Solar System*”, Massachusetts Institute of Technology, 2016. Location: Boston, MA, USA.

Talk: “*Machine Learning to Predict Planet Stability*”, Stars and Planets Seminar, Harvard University, 2016. Location: Boston, MA, USA.

Talk: “*Forming Planetary Systems: A Comparative Study Between the Solar System and the Kepler Population*”, Princeton University’s “Thunch”, 2016. Location: Princeton, NJ, USA.

Talk: “*HERMES: A hybrid integrator for simulating close encounters and planetesimal migration*”, Emerging Researchers in Exoplanet Science Symposium II (ERESS II), 2016. Location: Cornell University, NY, USA.

Poster: “*Tidal Forces Cannot Explain Planets Close to 2:1 Mean Motion Resonance*”, Extreme Solar Systems III (ESS-III), 2015. Location: Waikoloa Beach, HI, USA.

Talk: “*Sifting Through the Noise: A Re-calculation of the Occurrence of Earth-Sized Planets around Kepler Stars*”, Emerging Researchers in Exoplanet Science Symposium (ERESS), 2015. Location: University Park, PA, USA.

Talk: “*Extracting the Radius Distribution using noisy Kepler Data*”, CITA Blackboard Talk, 2015. Location: University of Toronto, Toronto, ON, Canada.

Talk: “*Improving the Beam Asymmetries for Compton Scattering from the 2008 Data*”, Atlantic Undergraduate Physics and Astronomy Conference (AUPAC), 2012. Location: Halifax, NS, Canada.

Talk: “*Extracting the Cross Sections and Beam Asymmetries from the 08 Data*”, Institut für Kernphysik, 2011. Location: Universität Mainz, Mainz, Germany.

Talk: “*Improving the Beam Asymmetries of the Proton*”, Mount Allison Summer Undergraduate Research Fair (SURF), 2011. Location: Sackville, NB, Canada.

TEACHING

I held the position of “Teaching Assistant” for all entries listed below, and was responsible for leading tutorial lectures, performing planetarium shows, conducting nighttime telescope observing sessions, marking and/or proctoring:

“PSCB 57: <i>Intro to Scientific Computing</i> ”, University of Toronto.	2016
“AST 251: <i>Life on Other Worlds</i> ”, University of Toronto.	2016
“AST 210: <i>Great Moments in Astronomy</i> ”, University of Toronto.	2015
“AST 101: <i>The Sun and its Neighbours</i> ”, University of Toronto.	2012–2015
“AST 201: <i>Stars and Galaxies</i> ”, University of Toronto.	2013–2014
“PHYS 1031: <i>Stars, Galaxies and the Universe</i> ”, Mount Allison University.	2012
“PHYS 3001: <i>Astrophysics</i> ”, Mount Allison University.	2011
“PHYS 3021: <i>Life in the Universe</i> ”, Mount Allison University.	2011
“PHYS 1021: <i>Solar System Astronomy</i> ”, Mount Allison University.	2010
“PHYS 1551: <i>General Physics II</i> ”, Mount Allison University.	2010
“PHYS 1051: <i>General Physics I</i> ”, Mount Allison University.	2009

SELECTED LEADERSHIP & OUTREACH

Executive Secretary, NASA Exoplanet (XRP) review panel.	2017
“AstroTours” Public Talk: “ <i>The Butterfly Effect: Chaos Theory and its Influence on our Lives</i> ”, University of Toronto, link: https://www.youtube.com/watch?v=kK3Kj1sSUeg	2016
“AstroTours” Keynote Lecture Head Organizer, University of Toronto. Invited Speaker – Fran Bagenal, University of Colorado Boulder.	2016
“AstroTours” Public Talk: “ <i>A Conversation With Our Old Friend The Moon</i> ”, University of Toronto, link: https://www.youtube.com/watch?v=HmCa9qN6DVA	2016
Scientific Consultant for WJ Gastle’s novel “ <i>Mission 32 (Will Hunter Chronicles Book 1)</i> ”.	2014–2016
Planetarium Operator and Lecturer at the University of Toronto Planetarium.	2013–2016
Telescope Operator and Volunteer for the University of Toronto’s “AstroTours”, University of Toronto.	2012–2016
“AstroTours” Public Talk: “ <i>Interstellar: The Science Behind the Movie</i> ”, University of Toronto, link: https://www.youtube.com/watch?v=_mbdxCD_6rA	2015
“AstroTours” Public Talk: “ <i>Distant Earths</i> ”, University of Toronto link: https://www.youtube.com/watch?v=mLYzxB8VjQY	2013
Astronomy Society Executive Member, Mount Allison University.	2010–2012
Telescope Operator for Public Tours and Science Labs, Mount Allison University.	2009–2012