Ari Silburt

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EDUCATION & WORK EXPERIENCE

Postdoc, Eberly Fellow, Astrophysics   2017–present
Location: Penn State University, State College, PA, USA
Professor/Mentor: Prof. Eric Ford

Data Scientist   2017
Location: Geotab, Oakville, ON, Canada
Manager: Mike Branch
Work: Detect potholes via machine learning using 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 to present 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 the highest GPA.   2012

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

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

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).

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.

MENTORING

I am currently supervising and mentoring the following student through a research project:

Christian Gilbertson, graduate student at Penn State University.   2017–present
Research: Machine Learning to predict orbital stability of high-N multi-planet systems.

TEACHING

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

"*PHYB54: Mechanics: From Oscillations to Chaos* ", University of Toronto.   2017

"*PSCB 57: Intro to Scientific Computing*", University of Toronto.   2016

"*AST 251: Life on Other Worlds*", University of Toronto.   2016

"*AST 210: Great Moments in Astronomy*", University of Toronto.   2015

"*AST 101: The Sun and its Neighbours*", University of Toronto.   2012–2015

"*AST 201: Stars and Galaxies*", University of Toronto.   2013–2014

"*PHYS 1031: Stars, Galaxies and the Universe*", Mount Allison University.   2012

"*PHYS 3001: Astrophysics*", Mount Allison University.   2011

"*PHYS 3021: Life in the Universe*", Mount Allison University.   2011

"*PHYS 1021: Solar System Astronomy*", Mount Allison University.   2010

"*PHYS 1551: General Physics II*", Mount Allison University.   2010

"*PHYS 1051: General Physics I*", Mount Allison University.   2009

SELECTED LEADERSHIP & OUTREACH

Executive Secretary, NASA Exoplanet (XRP) review panel. 2017

"AstroTours" Public Talk: "*The Butterfly Effect: Chaos Theory and its Influence on our Lives*", 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: "*A Conversation With Our Old Friend The Moon*", University of Toronto, link: `https://www.youtube.com/watch?v=HmCa9qN6DVA` 2016

Scientific Consultant for WJ Gastle's novel "*Mission 32 (Will Hunter Chronicles Book 1)*". 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: "*Interstellar: The Science Behind the Movie*", University of Toronto, link: `https://www.youtube.com/watch?v=_mbdxCD_6rA` 2015

"AstroTours" Public Talk: "*Distant Earths*", 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