

RESEARCH INTERESTS

Formation and Evolution of Planets and Planetary Systems

- (1) Numerical simulations (Hydro-dynamics and N-body dynamics)
 - (2) Applications to our solar system
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EDUCATION

University of Arizona, Tucson, AZ

August 2015 – Present

Ph.D. Student in Astronomy

Advisor: Professor Kaitlin Kratter

Cornell University, College of Arts and Sciences, Ithaca, NY

May 2015

B.A. in Physics with an Astrophysics Concentration

Minor in Computer Science

AWARDS

(1) NSF Graduate Research Fellowship

August 2015 – June 2020

(2) Co-I, NASA Astrophysics Theory Program Grant

Awarded December 2016

- *Hydrodynamic processes in planet-forming accretion disks*
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UNDERGRADUATE RESEARCH EXPERIENCE

Undergraduate Researcher

January 2014 – June 2015

Theoretical Astrophysics Group, *Cornell University*

Ithaca, NY

Advisors: Dr. Diego Muñoz and Professor Dong Lai

- Utilized the Mercury package to analyze the stability of circumbinary planets with inclined orbits

LEAPS Intern (LEAPS Program at Leiden)

June 2014 – August 2014

Computational Astrophysics Group, *Sterrewacht Leiden*

Leiden, The Netherlands

Advisors: Dr. Lucie Jilková and Professor Simon Portegies Zwart

- Determined which types of stellar flyby orbits can transfer objects from one disk to the other

NSF REU Intern

June 2013 – August 2013

Solar Physics Group, *Harvard-Smithsonian Center for Astrophysics*

Cambridge, MA

Advisors: Dr. Kamen Kozarev and Dr. Kelly Korreck

- Analyzed kinematics of coronal shock waves with the goal of predicting space weather at the Earth

Undergraduate Researcher

November 2011 – November 2012

Sub-mm Instrumentation Group, *Cornell University*

Ithaca, NY

Advisors: Professor Gordon Stacey and Dr. Thomas Nikola

- Developed a Python GUI to produce, display, and analyze spectra from the ZEUS-2 spectrometer
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COMPUTATIONAL EXPERIENCE

Languages: Python, Java, IDL, Unix, C, C++, MATLAB, OCaml, HTML

Packages: FARGO (hydro), AMUSE (multi-purpose), Mercury (N-body), HUAYNO (N-body)

PUBLICATIONS (1 first-author, 4 total)

- [1] **Hammer, M.**, Kratter, K., Lin, M.-K., 2017, *Slowly-growing gap-opening planets trigger weaker vortices*, MNRAS, 466, 3533
 - [2] Jilková, L., Hamers, A., **Hammer, M.**, & Portegies Zwart, S., 2016, *Mass transfer between debris discs during close stellar encounters*, MNRAS, 457, 4218
 - [3] Jilková, L., Portegies Zwart, S., Pijloo, T., & **Hammer, M.** 2015, *How Sedna and family were captured in a close encounter with a solar sibling*, MNRAS, 453, 3157
 - [4] Kozarev, K. A., Raymond, J. C., Lobzin, V. V., **Hammer, M.** 2014, *Properties of a Coronal Shock Wave as a Driver of Early SEP Acceleration*, ApJ, 799, 167
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POSTERS

- [1] **Hammer, M.**, Jilková, L., Portegies Zwart, S. 2015, *Transferring Mass between Circumstellar Disks during Stellar Flybys*. AAS Meeting 225, #349.02
 - [2] **Hammer, M.**, Kozarev, K. A., & Korreck, K. E. 2014, *Kinematics of Waves in the Solar Corona: Analyzing Potential Shock Waves to Predict Solar Energetic Particle Fluxes in Space Weather*. AAS Meeting 223, #158.02
 - [3] **Hammer, M.**, et al. 2014, *The Cornell Astronomical Society: The Student Experience of Running an Observatory*. AAS Meeting 223, #160.03
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TALKS

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| (1) | Steward Internal Symposium (Tucson, AZ) | September 2016 |
| | • <i>Generating a Vortex in the presence of a growing Gas Giant Planet</i> | |
| (2) | Emerging Researchers in Exoplanets Symposium (Ithaca, NY) | June 2016 |
| | • <i>Generating a Vortex in the presence of a growing Gas Giant Planet</i> | |
| (3) | LEAPS Symposium (Leiden, The Netherlands) | August 2014 |
| | • <i>Transferring Disks during Stellar Flybys</i> | |
| (4) | Solar Physics REU Symposium (Cambridge, MA) | August 2013 |
| | • <i>Kinematics of Waves in the Solar Corona</i> | |
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WORKSHOPS

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| (1) | NExSS Winter School (Tucson, AZ) | February 2016 |
| | • <i>Planetary Habitability</i> | |
| (2) | NExSci Sagan Summer Workshop (Pasadena, CA) | July 2015 |
| | • <i>Exoplanetary System Demographics: Theory and Observations</i> | |
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OUTREACH

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| (A) | Author , Astrobites | December 2015 – Present |
| | My Articles: https://astrobites.org/author/mhammer/ | |
| (B) | Contributing Author , ZME Science | September 2014 – January 2015 |
| | My Articles: http://www.zmescience.com/author/michaelhammer/ | |
| (C) | Outreach Coordinator , Cornell Society of Physics Students | January 2012 – December 2014 |
| | (i) Organized outreach events, (ii) Recruited students to volunteer, (iii) Co-managed SPS Website | |
| (D) | President , Cornell Astronomical Society | June 2013 – June 2014 |
| | (i) Ran weekly stargazing nights, (ii) Gave public lectures, (iii) Set up events with Astro. Dept. | |
| (E) | Writer , The Triple Helix: Science in Society Journal | August 2011 – December 2011 |
| | My Spring 2012 Article: https://lavinia.as.arizona.edu/~mhammer/articles/TTHarticle.pdf | |