

Michael Hammer

<https://lavinia.as.arizona.edu/~mhammer/>

RESEARCH INTERESTS

Formation and Evolution of Planets, Protoplanetary Disks, and Planetary Systems

- Numerical simulations (Hydro-dynamics and N-body dynamics)
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EDUCATION

University of Arizona, Tucson, AZ

Ph.D. Candidate in Astronomy and Astrophysics

August 2015 – Present

Advisor: Professor Kaitlin Kratter

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

B.A. in Physics with an Astrophysics Concentration

May 2015

[Minor in Computer Science]

AWARDS

(1) NSF Graduate Research Fellowship

August 2015 – August 2018

GRADUATE RESEARCH EXPERIENCE

Graduate Researcher

August 2015 – Present

Star and Planet Formation Theory Group, *University of Arizona*

Tucson, AZ

Advisors: Professor Kaitlin Kratter, Dr. Paola Pinilla, and Dr. Min-Kai Lin

- Determined vortices are weaker when triggered by realistically-grown planets
 - Determined these vortices have elongated appearances in dust observations
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UNDERGRADUATE RESEARCH EXPERIENCE (selected)

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
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LEAPS Intern (LEAPS Program at Leiden)

June 2014 – August 2014

Computational Astrophysics Group, *Sterrewacht Leiden*

Leiden, The Netherlands

Advisors: Dr. Lucie Jílková and Professor Simon Portegies Zwart

- Determined which stellar flyby orbits transfer objects between debris disks
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WORKSHOPS

(1) NExSS Winter School: *Planetary Habitability (Tucson, AZ)*

February 2016

(2) NExSci Sagan Workshop: *Exoplanet Demographics (Pasadena, CA)*

July 2015

PUBLICATIONS (2 first-author, 6 total)

- [1] **Hammer, M.**, Pinilla, P., Kratter, K., Lin, M.-K., 2019, *Observational diagnostics of ... planet-induced vortices with realistic planet formation time-scales*, MNRAS, 482, 3609
 - [2] Kozarev, K., Davey, A., Kendrick, A., **Hammer, M.**, Keith, C., 2017, *The Coronal Analysis of SHocks and Waves (CASHew) framework*, JSWSC, 7A, 32
 - [3] **Hammer, M.**, Kratter, K., Lin, M.-K., 2017, *Slowly-growing gap-opening planets trigger weaker vortices*, MNRAS, 466, 3533
 - [4] Jílková, L., Hamers, A., **Hammer, M.**, & Portegies Zwart, S., 2016, *Mass transfer between debris discs during close stellar encounters*, MNRAS, 457, 4218
 - [5] Jílková, 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
 - [6] 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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TALKS (selected)

Planet-induced vortices: The effects of realistic planet formation timescales

- (1) Star and Planet Formation in the Southwest 2 (*Oracle, AZ*) March 2018
- (2) Protoplanetary Disk Meeting (*Los Alamos, NM*) August 2017
- (3) Steward Observatory Internal Symposium (*Tucson, AZ*) September 2016
- (4) Emerging Researchers in Exoplanets Symposium (*Ithaca, NY*) June 2016

Transferring Disks during Stellar Flybys

- (1) LEAPS Symposium (*Leiden, The Netherlands*) August 2014
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POSTERS (selected)

- [1] **Hammer, M.**, Jílková, L., Portegies Zwart, S. 2015, *Transferring Mass between Circumstellar Disks during Stellar Flybys*, AAS 225, #349.02
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OUTREACH (selected)

- (A) **Teacher-in-training**, ISEE Professional Development Program March 2019 – June 2019
Teaching two-day instructional activity to undergraduate participants in AstroCom NYC
- (B) **Author**, Astrobites December 2015 – December 2018
(i) <https://astrobites.org/author/mhammer/>, (ii) Advertising chair, (iii) Social media czar
- (C) **Teaching Astronomer**, Project ASTRO September 2017 – May 2018
Taught several classes of 7th grade students astronomy-themed lessons
- (D) **Outreach Coordinator**, Cornell Society of Physics Students Jan. 2012 – Jan. 2015
(i) Organized outreach events, (ii) Recruited students for events, (iii) Managed Website
- (E) **President**, Cornell Astronomical Society June 2013 – June 2014
(i) Ran weekly stargazing nights, (ii) Gave public lectures, (iii) Set up Astro. Dept. events