Michael Hammer

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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

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*

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 Jílková 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

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] Jílková, L., Hamers, A., **Hammer, M.**, & Portegies Zwart, S., 2016, *Mass transfer between debris discs during close stellar encounters*, MNRAS, 457, 4218

[3] 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

[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

POSTERS

[1] **Hammer, M.**, Jílková, 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

TALKS

(1) Steward Internal Symposium *(Tucson, AZ)* — September 2016
- *Generating a Vortex in the presence of a growing Gas Giant Planet*

(2) Emerging Researchers in Exoplanets Symposium *(Ithaca, NY)* — June 2016
- *Generating a Vortex in the presence of a growing Gas Giant Planet*

(3) LEAPS Symposium *(Leiden, The Netherlands)* — August 2014
- *Transferring Disks during Stellar Flybys*

(4) Solar Physics REU Symposium *(Cambridge, MA)* — August 2013
- *Kinematics of Waves in the Solar Corona*

WORKSHOPS

(1) NExSS Winter School *(Tucson, AZ)* — February 2016
- *Planetary Habitability*

(2) NExScI Sagan Summer Workshop *(Pasadena, CA)* — July 2015
- *Exoplanetary System Demographics: Theory and Observations*

OUTREACH

(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