

Michael Hammer

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RESEARCH STATEMENT

I conduct hydrodynamic simulations of planets in protoplanetary discs to interpret disc observations and better understand planet formation.

POSITIONS

Academia Sinica, ASIAA, Taipei, Taiwan
Postdoctoral Fellow

December 2021 – Present
Supervisor: Professor Min-Kai Lin

EDUCATION

University of Arizona, Tucson, AZ
Ph.D. in Astronomy and Astrophysics
Thesis: *Planet-induced vortices: The effects of realistic planet formation timescales*

August 2021
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

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|-----|---|---------------------------|
| (1) | NASA Space Grant Fellowship (\$16K / yr for 1 yr) | August 2020 – August 2021 |
| (2) | NSF Graduate Research Fellowship (\$34K / yr for 3 yrs) | August 2015 – August 2020 |

PUBLICATIONS (3 first-author, 8 total)

ADS Library: <https://ui.adsabs.harvard.edu/public-libraries/7BISuDPxSZWNFyyco6ZgmA>

- [1] **Hammer, M.**, Lin, M.-K., Kratter, K., Pinilla, P., 2021, *Which planets trigger longer-lived vortices: low-mass or high-mass?*, MNRAS, 504, 3963
- [2] Su, K., Jackson, A., Gáspár, A., Rieke, G. et al. including **Hammer, M.**, 2019, *Extreme Debris Disk Variability: Exploring the Diverse Outcomes of Large Asteroid Impacts During the Era of Terrestrial Planet Formation*, AJ, 157, 202
- [3] **Hammer, M.**, Pinilla, P., Kratter, K., Lin, M.-K., 2019, *Observational diagnostics of elongated planet-induced vortices with realistic planet formation time-scales*, MNRAS, 482, 3609
- [4] Kozarev, K., Davey, A., Kendrick, A., **Hammer, M.**, Keith, C., 2017, *The Coronal Analysis of SHocks and Waves (CASHw) framework*, JSWSC, 7A, 32

- [5] **Hammer, M.**, Kratter, K., Lin, M.-K., 2017, *Slowly-growing gap-opening planets trigger weaker vortices*, MNRAS, 466, 3533
 - [6] Jílková, L., Hamers, A., **Hammer, M.**, Portegies Zwart, S., 2016, *Mass transfer between debris discs during close stellar encounters*, MNRAS, 457, 4218
 - [7] 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
 - [8] 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; conference talks in bold)

Planet-induced vortices: The effects of realistic planet formation timescales (Paper #4)

- (1) **Stars, Planets, and Formosa** (Taipei, Taiwan) August 2022

Planet-induced vortices: The effects of realistic planet formation timescales (Paper #3)

- (1) **Structure in planet-forming disks** (Munich, Germany – online) October 2021
- (2) **AAS Meeting 237**, #213.05 (Phoenix, AZ – online) January 2021
- (3) **Five Years After HL Tau** (Santiago, Chile – online) December 2020
- (4) CCA Planet Formation Group Meeting (New York City, NY – online) October 2020
- (5) QMUL Planet Formation Group Meeting (London, UK – online) October 2020
- (6) ITA Planet Formation Group Seminar (Heidelberg, Germany – online) September 2020

Planet-induced vortices: The effects of realistic planet formation timescales (Paper #2)

- (1) API Exoplanets & Disks Group Meeting (Amsterdam, The Netherlands) September 2019
- (2) ESO Lunch Talk (Garching, Germany) September 2019
- (3) **From protoplanetary discs to planetary systems** (Kreuth, Germany) September 2019
- (4) MPA Star and Planet Formation Coffee (Heidelberg, Germany) September 2019
- (5) **Star and Planet Formation in the Southwest 2** (Oracle, AZ) March 2018

Planet-induced vortices: The effects of realistic planet formation timescales (Paper #1)

- (1) **Protoplanetary Disk Meeting** (Los Alamos, NM) August 2017
 - (2) **Emerging Researchers in Exoplanets Symposium** (Ithaca, NY) June 2016
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POSTERS (selected)

- [1] **Hammer, M.**, Lin, M.-K., Kratter, K., Pinilla, P., 2020, *The effects of realistic planet formation timescales on vortices*, Planetesimal Meeting, Lund Observatory – online
 - [2] **Hammer, M.**, Jílková, L., Portegies Zwart, S., 2015, *Transferring Mass between Circumstellar Disks during Stellar Flybys*. AAS Meeting 225, #349.02
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