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* — December 2021 – Present
Postdoctoral Fellow — Supervisor: Professor Min-Kai Lin

EDUCATION

University of Arizona, *Tucson, AZ* — August 2021
Ph.D. in Astronomy and Astrophysics — Advisor: Professor Kaitlin Kratter
Thesis: *Planet-induced vortices: The effects of realistic planet formation timescales*

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) 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 (**4 first-author**, 9 total)

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

[1] **Hammer, M.**, Lin, M.-K., 2023, *How to form compact & other longer-lived planet-induced vortices: VSI, planet migration, or re-triggers, but not feedback*, MNRAS, 525, 123
[2] **Hammer, M.**, Lin, M.-K., Kratter, K., Pinilla, P., 2021, *Which planets trigger longer-lived vortices: low-mass or high-mass?*, MNRAS, 504, 3963
[3] Su, K., Jackson, A., Gáspár, A., Rieke, G. et al. including **Hammer, M.,** 2019, *Extreme Debris Disk Variability: Exploring … Large Asteroid Impacts*, AJ, 157, 202
[4] **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
[5] Kozarev, K., Davey, A., Kendrick, A., **Hammer, M.**, Keith, C., 2017, *The Coronal Analysis of SHocks and Waves (CASHeW) framework*, JSWSC, 7A, 32

[6] **Hammer, M.**, Kratter, K., Lin, M.-K., 2017, *Slowly-growing gap-opening planets trigger weaker vortices*, MNRAS, 466, 3533

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

[8] 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

[9] 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

TALKS (selected; conference talks in bold)

Should vortices be even more ubiquitous in protoplanetary disk observations? (Paper #4)

(1) CCA Planet Formation Group Meeting *(New York City, NY)* October 2022

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

Should vortices be more ubiquitous in protoplanetary disk observations? (Paper #3)

(1) **Structure in planet-forming disks** (*Munich, Germany* – online) October 2021

(2) **Five Years After HL Tau** (*Santiago, Chile* – online) December 2020

(3) QMUL Planet Formation Group Meeting *(London, UK* – online*)* October 2020

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

(1) ESO Lunch Talk *(Garching, Germany)* September 2019

(2) **From protoplanetary discs to planetary systems** *(Kreuth, Germany)* September 2019

(3) MPIA Star and Planet Formation Coffee *(Heidelberg, Germany)* September 2019

(4) **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

POSTERS (selected)

[1] **Hammer, M.**, Lin, M.-K., 2023, *How to form compact & other longer-lived planet-induced vortices: VSI, planet migration, or re-triggers, but not feedback*, PPVII, Kyoto, Japan

[2] **Hammer, M.**, Lin, M.-K., 2022, *Planet-induced vortices with the VSI*, VSI Meeting, Copenhagen, Denmark – online

[3] **Hammer, M.**, Lin, M.-K., Kratter, K., Pinilla, P., 2020, *The effects of realistic planet formation timescales on vortices*, Planetestimal Meeting, Lund Observatory – online

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