

Eric R. Moseley

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EDUCATION

Sep 2018 - Aug 2024 **Princeton University**—Ph.D. in Astrophysics
Sep 2018 - Aug 2020 **Princeton University**—M.A. in Astrophysics
Sep 2014 - Jun 2018 **California Institute of Technology (Caltech)**—B.S. in Astrophysics

RESEARCH & WORK EXPERIENCE

KIPAC Fellow, KIPAC at Stanford/SLAC Oct 2024 - present
Graduate Student Researcher, Princeton University Sep 2018 - Aug 2024
with R. Teyssier (Princeton), B. T. Draine (Princeton), J. M. Stone (Princeton), K. Tomida (Tohoku University)
Graduate Assistant in Instruction, Princeton University
– AST 204: Topics in Modern Astronomy *with J. Winn* Spring 2020
– AST 206: Black Holes *with E. Quataert* Spring 2023
Undergraduate Teaching Assistant, Caltech Spring 2017
– Ay 1: The Evolving Universe *with G. Djorgovski*
Summer Undergraduate Research Fellowship (SURF), Caltech Summers 2015, 2017
with E. N. Kirby (Caltech)(2015), and P. F. Hopkins (Caltech) & J. Squire (University of Otago)(2017)
SURF Exchange Program, University of Iceland Summer 2016
with J. Zavala-Franco (University of Iceland)

RESEARCH INTERESTS

- Numerical methods for astrophysical fluid simulations
- Non-ideal magnetohydrodynamics
- Interstellar chemistry
- Magnetic field structure
- Dust-gas dynamics & instabilities
- Cosmic ray propagation, diffusion, and confinement

PUBLICATIONS (FIRST AUTHOR)

- Moseley, E. R., R. Teyssier, and T. Abel (2026). “Itô tracers: continuous-trajectory Lagrangian particles for Eulerian hydrodynamics”. In: *Monthly Notices of the Royal Astronomical Society* 551.3, stag1536. DOI: [10.1093/mnras/stag1536](https://doi.org/10.1093/mnras/stag1536).
- Moseley, E. R. and R. Teyssier (2025). “Dust dynamics in RAMSES—II. Equilibrium drift velocity distributions of charged dust grains”. In: *Monthly Notices of the Royal Astronomical Society* 542.2, pp. 1011–1032.
- Moseley, E. R., R. Teyssier, and B. T. Draine (2023). “Dust dynamics in RAMSES—I. Methods and turbulent acceleration”. In: *Monthly Notices of the Royal Astronomical Society* 518.2, pp. 2825–2844.
- Moseley, E. R., B. T. Draine, K. Tomida, and J. M. Stone (2021). “Turbulent dissipation, CH^+ abundance, H_2 line luminosities, and polarization in the cold neutral medium”. In: *Monthly Notices of the Royal Astronomical Society* 500.3, pp. 3290–3308.
- Moseley, E. R., J. Squire, and P. F. Hopkins (2019). “Non-linear evolution of instabilities between dust and sound waves”. In: *Monthly Notices of the Royal Astronomical Society* 489.1, pp. 325–338.

PUBLICATIONS (CO-AUTHORED)

- Israeli, B. Y., J. Squire, E. R. Moseley, and A. Bhattacharjee (2026). “Non-linear saturation of the acoustic resonant drag instability”. In: *Monthly Notices of the Royal Astronomical Society* 551.3, stag1288. DOI: [10.1093/mnras/stag1288](https://doi.org/10.1093/mnras/stag1288).
- Sampson, M. L., J. R. Beattie, R. Teyssier, P. Kempfski, E. R. Moseley, B. Commerçon, Y. Dubois, and J. Rosdahl (2026). “Cosmic-Ray and Plasma Coupling for Isothermal Supersonic Turbulence in the Magnetized Interstellar Medium”. In: *The Astrophysical Journal* 1001.1, 99. DOI: [10.3847/1538-4357/ae4edc](https://doi.org/10.3847/1538-4357/ae4edc).
- Teyssier, R., E. R. Moseley, R. V. Caddy, T. Haugbolle, J. Sunseri, J.-Y. Lee, J. Palafoutas, Y. Pan, W. Groger, T. Abel, B. Loring, and G. Barnier (2026). *RAMSES-GPU: Cell-by-Cell Adaptive Mesh Refinement with Magneto-Hydrodynamics and Self-Gravity on Graphics Processing Units*. Preprint; submitted to RASTI. arXiv: [2607.20704](https://arxiv.org/abs/2607.20704).

WORK IN PREPARATION

- Moseley, E. R., R. Teyssier, and S. E. Clark (2026). “A stochastic, guiding-center method for highly charged dust in the interstellar medium”. In preparation.

TALKS & CONFERENCES

· Interstellar Institute 8 talk	Sep–Oct 2026
· RAMSES User Meeting 2026 talk	Apr 2026
· The Dusty Universe 2025: The Fifth Pan Dust Conference poster	Nov 2025
· Numerical Recipes in Star Formation talk (Lorentz Center, Leiden, NL)	Jul 2025
· UC Santa Cruz Flash Talk	Mar 2025
· RAMSES User Meeting 2024 talk	Apr 2024
· Salpeter Workshop on the ISM talk	Dec 2023
· KIPAC tea talk	Dec 2023
· Illuminating the Dusty Universe: A Tribute to the Work of Bruce Draine talk	Oct 2023
· MIST 2023: Cosmic turbulence and magnetic fields poster	Sep 2023
· Star@Lyon 2023 poster	Jun 2023
· RAMSES User Meeting 2023 talk	Apr 2023
· 241 st Meeting of the American Astronomical Society talk	Jan 2023
· University of Maryland Center for Theory and Computation (CTC) Seminar talk	Dec 2022
· From Stars to Galaxies II poster	Jun 2022
· 240 th Meeting of the American Astronomical Society talk	Jun 2022
· Princeton Astrophysics Star Formation and Interstellar medium Rendezvous (SFIR) talk	Apr 2022
· Center for Computational Astrophysics Galaxy Group visitor talk	Feb 2022
· Osaka University Astrophysics Department talk	Feb 2020
· 3 rd Swinburne-Caltech Workshop: Galaxies and their Halos “flash” talk	Sep 2017
· Summer Undergraduate Research Fellowship Seminar Day talk	Oct 2015-2017

PROFESSIONAL AND OUTREACH EXPERIENCE

· Astronomy & Astrophysics — referee	2025
· Monthly Notices of the Royal Astronomical Society — referee	2021
· Princeton Prison Teaching Initiative — mathematics instructor	Spring 2020
· Princeton Astrophysics “Thunch” seminar organizer	2018-2019
· Astronomy on Tap talk (Trenton, NJ)	Fall 2019
· Astronomy on Tap volunteer (Pasadena, CA)	2016-2018

RELEVANT SKILLS

Coding languages

Python	Proficient
Mathematica & WolframScript	Proficient
Fortran/CUDA Fortran	Proficient
C & C++	Some knowledge

Fluid codes I have worked with

RAMSES, RAMSES II, GIZMO, Athena++, Dedalus