Adrian M. Price-Whelan — Curriculum Vitae

Associate Research Scientist & Leader of Galactic Dynamics Group
Center for Computational Astrophysics, Flatiron Institute,
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Assistant Director of Scientific Software, Simons Foundation
Math and Physical Sciences, Simons Foundation,
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Education and past positions

2019–2021, Flatiron Research Fellow, Flatiron Institute

2016–2019, Lyman J. Spitzer, Jr. fellow, Princeton University

Ph. D. 2016, Astronomy, Columbia University. *Advisor: K. V. Johnston*

M.A. 2013, MPhil 2014, Astronomy, Columbia University. *Advisor: K. V. Johnston*

Honors B.A. 2010, Physics, New York University. *Advisor: D. W. Hogg*

Publications

Full publication list — *ADS search*

Refereed: 144 articles (20 first author)
Citations 45851
h-index: 54
(as of *2025-05-05*)

Highlighted and Recent Work

18 Bonaca, A.; **Price-Whelan, A. M.**, *Stellar streams in the Gaia era*, New Astronomy Reviews, 100, 101713, 2025 (arXiv:2405.19410) [33 citations]

17 Tavangar, K.; **Price-Whelan, A. M.**, *Inferring the density and membership of stellar streams with flexible models: The GD-1 stream in Gaia Data Release 3*, 2025 (arXiv:2502.13236) [2 citations]

16 Horta, D.; **Price-Whelan, A. M.**; Hogg, D. W.; Ness, M. K. *et al.*, *Lux: A generative, multi-output, latent-variable model for astronomical data with noisy labels*, 2025 (arXiv:2502.01745)

15 **Price-Whelan, A. M.**; Hunt, J. A. S.; Horta, D.; Oeur, M. *et al.*, *Data-driven Dynamics with Orbital Torus Imaging: A Flexible Model of the Vertical Phase Space of the Galaxy*, ApJ, 979, 115, 2025 (arXiv:2401.07903) [4 citations]

14 Garavito-Camargo, N.; **Price-Whelan, A. M.**; Samuel, J.; Cunningham, E. C. *et al.*, *On the Corotation of Milky Way Satellites: LMC-mass Satellites Induce Apparent Motions in Outer Halo Tracers*, ApJ, 975, 100, 2024 (arXiv:2311.11359) [10 citations]

13 Hunt, J. A. S.; **Price-Whelan, A. M.**; Johnston, K. V.; McClure, R. L. *et al.*, *Radial phase spirals in the Solar neighbourhood*, MNRAS, 527, 11393, 2024 (arXiv:2401.08748) [9 citations]

12 Horta, D.; **Price-Whelan, A. M.**; Hogg, D. W.; Johnston, K. V. *et al.*, *Orbital Torus Imaging: Acceleration, Density, and Dark Matter in the Galactic Disk Measured with Element Abundance Gradients*, ApJ, 962, 165, 2024 (arXiv:2312.07664) [10 citations]

11 Hunt, J. A. S.; **Price-Whelan, A. M.**; Johnston, K. V.; Darragh-Ford, E., *Multiple phase spirals suggest multiple origins in Gaia DR3*, MNRAS, 516, 2022 (arXiv:2206.06125) [47 citations]

10 Astropy Collaboration; **Price-Whelan, A. M.**; Lim, P. L.; Earl, N. *et al.*, *The Astropy Project: Sustaining and Growing a Community-oriented Open-source Project and the Latest Major Release (v5.0) of the Core Package*, ApJ, 935, 167, 2022 (arXiv:2206.14220) [2906 citations]

9 **Price-Whelan, A. M.**; Hogg, D. W.; Rix, H.; Beaton, R. L. *et al.*, *Close Binary Companions to APOGEE DR16 Stars: 20,000 Binary-star Systems Across the Color-Magnitude Diagram*, ApJ, 895, 2, 2020 (arXiv:2002.00014) [107 citations]

8 **Price-Whelan, A. M.**; Nidever, D. L.; Choi, Y.; Schlafly, E. F. *et al.*, *Discovery of a Disrupting Open Cluster Far into the Milky Way Halo: A Recent Star Formation Event in the Leading Arm of the Magellanic Stream?*, ApJ, 887, 19, 2019 (arXiv:1811.05991) [33 citations]

7 Bonaca, A.; Hogg, D. W.; **Price-Whelan, A. M.**; Conroy, C., *The Spur and the Gap in GD-1: Dynamical Evidence for a Dark Substructure in the Milky Way Halo*, ApJ, 880, 38, 2019 (arXiv:1811.03631) [198 citations]

6 **Price-Whelan, A. M.**; Bonaca, A., *Off the Beaten Path: Gaia Reveals GD-1 Stars outside of the Main Stream*, ApJ, 863, 2018 (arXiv:1805.00425) [120 citations]

5 **Price-Whelan, A. M.**, *Gala: A Python package for galactic dynamics*, JOSS, 2, 388, 2017 [258 citations]

4 Oh, S.; **Price-Whelan, A. M.**; Hogg, D. W.; Morton, T. D. *et al.*, *Comoving Stars in Gaia DR1: An Abundance of Very Wide Separation Comoving Pairs*, AJ, 153, 257, 2017 (arXiv:1612.02440) [157 citations]

3 **Price-Whelan, A. M.**; Hogg, D. W.; Foreman-Mackey, D.; Rix, H., *The Joker: A Custom Monte Carlo Sampler for Binary-star and Exoplanet Radial Velocity Data*, ApJ, 837, 20, 2017 (arXiv:1610.07602) [128 citations]

2 **Price-Whelan, A. M.**; Johnston, K. V.; Valluri, M.; Pearson, S. *et al.*, *Chaotic dispersal of tidal debris*, MNRAS, 455, 1079, 2016 (arXiv:1507.08662) [67 citations]

1 **Price-Whelan, A. M.**; Hogg, D. W.; Johnston, K. V.; Hendel, D., *Inferring the Gravitational Potential of the Milky Way with a Few Precisely Measured Stars*, ApJ, 794, 4, 2014 (arXiv:1405.6721) [54 citations]

Grants and observing

Cold Dark Matter and the GD-1 Stellar Stream, Hubble Space Telescope, Cycle 27, 2019

Spectroscopic follow-up of a young cluster near the Leading Arm of the Magellanic System, Clay Telescope, MIKE, 2019

Three-dimensional kinematics of the GD-1 stellar stream, MMT 6.5m, 2018

Comoving stars in Gaia DR1, Hiltner Telescope, MDM, 2017

TRACSSS-2: Tracing More Cold Stellar Streams with Spitzer, Spitzer mission, Cycle 13, 2016

The Triangulum-Andromeda stellar clouds: a population of halo stars kicked out of the Galactic disk?, Hiltner Telescope, MDM, 2015

Spitzer Merger History and Shape of the Galactic Halo, Spitzer mission, Cycle 10, 2014

Gaia, Spitzer, and the potential of the Milky Way, NASA theory grant, 2014–2016

Sigma Xi Grants in Aid of Research, 2013

Probing the Milky Way's dark matter halo with RR Lyraes, Hiltner Telescope, MDM, 2013

Honors and awards

Lancelot M. Berkeley–New York Community Trust Prize, with the Astropy project (2025)

IOP Publishing Top Cited Paper Award, with the Astropy Project (2023)

ADASS Software Prize, with the Astropy Project (2022)

Rising Star in Astronomy, Astronomy Magazine (November 2022)

Blavatnik Regional Awards, Winner in Physical Sciences and Engineering (2020)

Group Achievement Award from the Royal Astronomical Society (Astropy Project; 2020)

Dr. Pliny A. and Margaret H. Price Prize in Cosmology and AstroParticle Physics (2015)

NSF Graduate Research Fellowship (2012–2016)

Survey architect, SDSS-III (2011–2014)

Phi Beta Kappa, Beta of New York (2010–2016)

Summa cum laude, New York University (2010)

Samuel F.B. Morse Medal, awarded for excellence in physics (2010)

Recent presentations

In all disorder a secret order: Using the Milky Way as a laboratory to study dark matter and dynamical processes, UT Austin, 2023 (colloquium; Tinsley Prize Lecture)

In all disorder a secret order: Using the Milky Way as a laboratory to study dark matter and dynamical processes, Yale University, 2023 (colloquium)

Membership modeling and probabilistic modeling with JAX and numpyro, Streams22 meeting, Carnegie Observatories, 2022 (plenary)

LSSTC DSFP lecturer in Hierarchical Modeling, Northwestern U, 2022 (lecture series)

Mapping Dark Matter with Stellar Streams, SCSU, 2021 (colloquium)

A New Era for Galactic Dynamics in the Milky Way, AAS 237, 2021 (**invited plenary**)

Mapping Dark Matter with Stellar Streams, University of Utah, 2020 (colloquium)

Mapping Dark Matter with Stellar Streams: Signatures of Dark Matter Substructure, CCPP, New York University, 2020 (colloquium)

Mapping Dark Matter with Stellar Streams: Imprints of Galactic Dynamical Phenomena, CCA, Flatiron Institute, 2020 (colloquium)

Mapping Dark Matter with Stellar Streams, LSA, University of Michigan, 2020 (colloquium)

Discovery and characterization of a recent star formation event in the Magellanic Leading Arm, AAS, Honolulu, 2020 (contributed talk and press conference)

Discovery and characterization of a recent star formation event in the Magellanic Leading Arm, A synoptic view of the Magellanic Clouds, ESO Garching 2019 (contributed talk)

A detailed look at the GD-1 stellar stream, KITP, Santa Barbara, 2019 (contributed talk)

The Milky Way as a benchmark, UCONN, Connecticut, 2019 (colloquium)

The Milky Way as a benchmark, Princeton/IAS, Princeton, 2019(colloquium)

The GD-1 stream and dark matter around the Milky Way, AAS, Seattle, 2019 (contributed talk)

The Dynamic Milky Way in the Gaia Era, University of Arizona, Arizona, 2018 (colloquium)

The Dynamic Milky Way in the Gaia Era, Princeton/IAS, Princeton, 2018 (colloquium)

A disk origin for inner stellar halo structures, Stellar halos, Heidelberg, 2018 (contributed talk)

An Overview of the Astropy Project, Python in Astronomy, NYC, 2018 (invited keynote)

Binary star science with many targets, few epochs, SnowPAC, Utah, 2018 (conference)

The Galactic bar and its effect on stellar streams, University of Kentucky, 2018 (seminar)

Comoving stars in the Gaia era, HAA, NRC-Herzberg, 2018 (seminar)

Comoving stars in the Gaia era, University of British Columbia, 2018 (colloquium)

Fitting a straight line to data, Computational Physics Workshop, Princeton, 2017 (invited)

Open source development

Core contributor and member of the Coordinating Committee for the Astropy project

Core developer of gala, thejoker, schwimmbad, pyia

Advising and mentorship

Direct mentor for 9 undergraduate students or *Google Summer of Code* participants (through the Astropy project),

Mentor for 18 graduate students or post-baccalaureate students,

Mentor for 8 post-doctoral fellows.

Teaching

Lecturer for the *LSSTC: Data Science Fellowship Program*, 2022, Northwestern U

Co-lead organizer and workshop coordinator for the *Big Apple Dynamics School*, 2021, Flatiron Institute

Lecturer, breakout leader, participant at Astro Hack Week (2014–2018)
Data science seminar, co-organized with Peter Melchior, 2018, Princeton University
PHY121: Intro to Astronomy, Prison Teaching Initiative, Fort Dix Correctional Facility
AST 542: Statistics and Machine Learning, Co-instructor, 2017, Princeton University
Galaxies, Teaching assistant, 2014, Columbia University
Stars, Planets, and Galaxies, Lab instructor, 2013, Columbia University
Earth, Moon, and Planets, Lab instructor, 2012, Columbia University
Stars, Planets, and Galaxies, Teaching assistant, 2012, Columbia University

Workshop and meeting organization

Organizer of the *GaiaUnlimited* community workshop, October 2023, Turin, IT
Organizer of the *Gaia XPloration* workshop, May 2023, Cambridge, UK
Chair of organizing committee for *Future of Astronomical Data Infrastructure* at the Simons Foundation, Feb 2023
Organizer of Streams22: Community Atlas of Tidal Streams, Nov 2022
Organizer of *DDA 53* meeting at the Flatiron Institute, Apr 2022
Organizer of *Astronomical Software Development* at the Flatiron Institute, May 2022
Organizer of *From Data to Software to Science with the Rubin Observatory LSST* at the Flatiron Institute, Mar 2022
Co-lead organizer of *Big Apple Dynamics School*, a Galactic Dynamics summer school at the Flatiron Institute, June–August 2021
Organizer of *Streams21* meeting Streams21: Constraints on Dark Matter, Feb 2021
Organizer of Applied Galactic Dynamics Summer School, postponed until 2021 at earliest
Organizer of the Gaia sprints, 2016–present
Instructor (Astropy) at PyData NYC, 2017
Instructor (Machine Learning) at AstroHackWeek, 2017
Organizer of SciCoder workshop, 2011–2013, 2015
AstroHackNY, NYC astronomy & statistics group meetings, (organizer, 2014-2015)
NYCastroML, machine learning and statistics group meetings, (organizer, 2013-2014)

Public outreach

Planetarium speaker at Liberty Science Center *After Dark*, 2023
Volunteer with the Prison Teaching Initiative, 2017
The bar at the center of the Galaxy, 2016, public outreach talk, Astronomy on Tap, NYC
Galactic synthesizers, 2015, public outreach talk, Columbia University, NYC
Dark matter, 2015, public outreach talk, 100% Outer Space, Silent Barn, Brooklyn, NY

Organizer for Astronomy on Tap (uptown), 2013-2014, public outreach talks at bars in NYC

Light, 2012, public outreach talk for middle school girls, astro4girls, Ridgefield Library

Member of Rooftop variables, 2011–2016, Isaac E. Young Middle School, New Rochelle, NY (partner teacher: Scott Misner)

Roof captain and manager, 2011–2016, bi-weekly events for Columbia Astronomy outreach

Professional services & activities

Referee: MNRAS, ApJ, A&A, Phys. Rev. L, Phys. Rev. D, Journal of Open Source Software

Member: AAS, NSBP, NYAS

TACs: NASA, NOAO

NSF Committee of Visitors (2023)