

# Drummond B. Fielding

## Curriculum Vitae

Flatiron Research Fellow

Center for Computational Astrophysics, Flatiron Institute,  
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## Education

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PhD 2018, Astrophysics, University of California, Berkeley. Advisor: *Eliot Quataert*

MA 2014, Astrophysics, University of California, Berkeley. Advisor: *Eliot Quataert*

BS, BA 2012, Physics, Mathematics, Johns Hopkins University. Advisor: *Colin Norman*

## Professional Appointments

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Flatiron Research Fellow (5 year appointment), CCA	2018-present
Visiting Scholar, Indian Institute of Science	2016
Graduate Researcher, U.C., Berkeley	2012-2018

## Honors and awards

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Flatiron Fellowship	2018-2023
Outstanding Graduate Student Instructor Award	2014
NSF Graduate Research Fellowship	2014-2017
Berkeley Graduate Fellowship	2012-2014
Donald E. Kerr Award for Outstanding Physics Undergraduate	2012
The Phi Beta Kappa Society	2012

## Publications — [ADS search](#) — [ORCID](#)

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refereed: 19 — first author: 6 — citations: 560 — h-index: 12 (2021-02-04)

### Refereed

- 19 \*Pandya, V. *et al.* (incl. **DBF**), *First Results from SMAUG: The Need for Preventative Stellar Feedback and Improved Baryon Cycling in Semianalytic Models of Galaxy Formation*, *ApJ*, **905**, 4, 2020 (arXiv:2006.16317) [7 citations] \*student led project
- 18 Burkhardt, B. *et al.* (incl. **DBF**), *The Catalogue for Astrophysical Turbulence Simulations (CATS)*, *ApJ*, **905**, 14, 2020 (arXiv:2010.11227) [3 citations]
- 17 Kim, C.; Ostriker, E. C.; **Fielding, D. B.**; Smith, M. C. *et al.*, *A Framework for Multiphase Galactic Wind Launching Using TIGRESS*, *ApJ*, **903**, 2020 (arXiv:2010.09090) [2 citations]

- 16 \*Butsky, I. S.; **Fielding, D. B.**; Hayward, C. C.; Hummels, C. B. et al., *The Impact of Cosmic Rays on Thermal Instability in the Circumgalactic Medium*, ApJ, **903**, 77, 2020 (arXiv:2008.04915) [2 citations]\*student led project
- 15 **Fielding, D. B.**; Tonnesen, S.; DeFelippis, D.; Li, M. et al., *First Results from SMAUG: Uncovering the Origin of the Multiphase Circumgalactic Medium with a Comparative Analysis of Idealized and Cosmological Simulations*, ApJ, **903**, 32, 2020 (arXiv:2006.16316) [9 citations]
- 14 Kim, C. et al. (incl. **DBF**), *First Results from SMAUG: Characterization of Multiphase Galactic Outflows from a Suite of Local Star-forming Galactic Disk Simulations*, ApJ, **900**, 61, 2020 (arXiv:2006.16315) [13 citations]
- 13 **Fielding, D. B.**; Ostriker, E. C.; Bryan, G. L.; Jermyn, A. S., *Multiphase Gas and the Fractal Nature of Radiative Turbulent Mixing Layers*, ApJ, **894**, 2020 (arXiv:2003.08390) [17 citations]
- 12 Lochhaas, C. et al. (incl. **DBF**), *Properties of the simulated circumgalactic medium*, MNRAS, **493**, 1461, 2020 (arXiv:1908.00021) [9 citations]
- 11 Stern, J.; **Fielding, D. B.**; Faucher-Giguère, C.; Quataert, E., *The maximum accretion rate of hot gas in dark matter haloes*, MNRAS, **492**, 6042, 2020 (arXiv:1909.07402) [9 citations]
- 10 Stern, J.; **Fielding, D. B.**; Faucher-Giguère, C.; Quataert, E., *Cooling flow solutions for the circumgalactic medium*, MNRAS, **488**, 2549, 2019 (arXiv:1906.07737) [24 citations]
- 9 Martizzi, D.; Quataert, E.; Faucher-Giguère, C.; **Fielding, D. B.**, *Simulations of jet heating in galaxy clusters: successes and challenges*, MNRAS, **483**, 2465, 2019 (arXiv:1805.06461) [27 citations]
- 8 **Fielding, D. B.**; Quataert, E.; Martizzi, D., *Clustered supernovae drive powerful galactic winds after superbubble breakout*, MNRAS, **481**, 3325, 2018 (arXiv:1807.08758) [49 citations]
- 7 Stern, J. et al. (incl. **DBF**), *Does Circumgalactic O VI Trace Low-pressure Gas Beyond the Accretion Shock? Clues from H I and Low-ion Absorption, Line Kinematics, and Dust Extinction*, ApJ, **865**, 91, 2018 (arXiv:1803.05446) [27 citations]
- 6 **Fielding, D. B.**; Quataert, E.; Martizzi, D.; Faucher-Giguère, C., *How supernovae launch galactic winds?*, MNRAS, **470**, 2017 (arXiv:1704.01579) [43 citations]
- 5 **Fielding, D. B.**; Quataert, E.; McCourt, M.; Thompson, T. A., *The impact of star formation feedback on the circumgalactic medium*, MNRAS, **466**, 3810, 2017 (arXiv:1606.06734) [86 citations]
- 4 Offner, S. S. R. et al. (incl. **DBF**), *The Turbulent Origin of Outflow and Spin Misalignment in Multiple Star Systems*, ApJ, **827**, 2016 (arXiv:1606.08445) [52 citations]
- 3 Martizzi, D.; **Fielding, D. B.**; Faucher-Giguère, C.; Quataert, E., *Supernova feedback in a local vertically stratified medium: interstellar turbulence and galactic winds*, MNRAS, **459**, 2311, 2016 (arXiv:1601.03399) [57 citations]
- 2 **Fielding, D. B.**; McKee, C. F.; Socrates, A.; Cunningham, A. J. et al., *The turbulent origin of spin-orbit misalignment in planetary systems*, MNRAS, **450**, 3306, 2015 (arXiv:1409.5148) [59 citations]
- 1 Schlieder, J. E. et al. (incl. **DBF**), *The Na 8200 Å Doublet as an Age Indicator in Low-mass Stars*, AJ, **143**, 114, 2012 (arXiv:1202.4191) [58 citations]

## Preprints & other

- 3 \*Abruzzo, M. W.; Bryan, G. L.; **Fielding, D. B.**, *A simple model for mixing and cooling in cloud-wind interactions*, 2021 ([arXiv:2101.10344](#))\*student led project
- 2 Stern, J.; Faucher-Giguère, C.; **Fielding, D. B.**; Quataert, E. et al., *Virialization of the inner CGM in the FIRE simulations and implications for galaxy discs, star formation and feedback*, 2020 ([arXiv:2006.13976](#)) [[7 citations](#)]
- 1 Voit, G. M. et al. (incl. **DBF**), *Circumgalactic Gas and the Precipitation Limit*, 2019 ([arXiv:1903.11212](#))

## Student advising

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*Iryna Butsky* — Graduate Student — University of Washington + CCA predoctoral fellow

*Viraj Pandya* — Graduate Student — UC Santa Cruz + CCA predoctoral fellow

*Matthew Abruzzo* — Graduate Student — Columbia

*Zirui Chen* — Undergraduate Student — Columbia

*Miles Cranmer* — Graduate Student — Princeton

## Public outreach

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Founder and leader of *The Astro Club*. Monthly meetings 2020–present. [Democracy Prep Charter Middle School](#), Harlem, NY.

Astronomy career day, [Democracy Prep Charter Middle School](#), Harlem, NY 2019

Taught a month-long series of astronomy classes to 2nd and 3rd grade students. 2017. North Oakland Community Charter School, Oakland, CA

Undergrad mentor UC Berkeley Astronomy, 2016-2017

UC Berkeley Astronomy Department Public Liaison, 2015

*East Bay Astronomical Society* Public Lecture, 2014, Chabot Space and Science Center

*The Berkeley Compass Project* Summer Evening Instructor, 2013

## Professional services & teaching

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Founder and organizer of the **New York Area Fluid Dynamics Meeting**, a cross-disciplinary monthly meeting of local fluid dynamicists, 2020–

[Flatiron Pre-Doctoral Program](#) graduate student mentor, 2019–

Graduate Student Instructor: Astronomy C12 ‘The Planets’(UC Berkeley)

Graduate Student Instructor: Astronomy 7A (UC Berkeley)

Referee: MNRAS, ApJ, ApJL

NSF proposal evaluation panelist, 2020

## Grants

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*DUVET: Mapping Outflows and the Inner CGM in Starbursting Disks*, KCWI, Co-I, 2020

*Visiting scholar grant to work Indian Institute of Science with Prof. Prateek Sharma*, APS-IUSSTF, 2016

*Towards an Understanding of the Origin of OVI in the Circumgalactic Medium*, HST ARG, Co-I, 2017

*The Physics of Supernova Feedback: Global 3D Simulations of Galactic Disks*, NSF XSEDE, Co-I, 2016-2018

*Conduction, Convection, and Thermal Instability in Hot Halos*, NSF XSEDE, Co-I, 2016-2017

## Selected recent presentations

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[Keynote speaker](#), KITP workshop *Fundamentals of Gaseous Halos* (1/2021)

Invited talk, KITP conference *On the Origin, Nature, and Mixing of Multiphase Gas in Astrophysics* (10/2020)

Gaggle Seminar, Carnegie Institution for Science (8/2020)

Invited talk, CLEARNESS conference IAP (6/2020)

CGI Colloquium, U.C. Santa Cruz (4/2020)

Contributed Talk, Universality of Turbulence Conference, Flatiron Institute, NY (12/2019)

SFIR Seminar, Princeton University (11/2019)

Astro Seminar, NYU CCPP, New York NY (10/2019)

Invited Talk, CGM conference, Berlin Germany (10/2019)

Lunch Talk, CCA, New York NY (10/2019)

Contributed Talk, Feedback conference, Spetses Greece (6/2019)

Invited seminar, Turbulence workshop, Aspen Center for Physics (6/2019)

Contributed Talk, CGM/IGM conference, Spineto Italy (6/2019)

Invited Talk, *athena++* conference, Las Vegas NV (3/2019)

Invited Talk, CGM conference, Northwestern, Chicago IL (8/2018)

Invited Talk, CGM/DLA conference, Big Sur CA (3/2018)

TAPIR Seminar, Caltech, Pasadena CA (11/2017)

Astronomy Colloquium, Raman Research Institute (12/2016)

Astronomy Department Colloquium, Indian Institute of Science (10/2016)