

Drummond B. Fielding

Curriculum Vitae

Flatiron Research Fellow

Center for Computational Astrophysics, Flatiron Institute,
162 Fifth Ave., New York, NY 10010, USA

✉ drummondfielding@gmail.com [🔗 dfielding14.github.io](https://github.com/dfielding14) [📄 arXiv](#)

Research interests

galactic winds	stellar feedback	fluid dynamics
circumgalactic medium	galaxy formation	plasma physics
supernova remnants	star formation	machine learning

Education

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: C. Norman

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

refereed: 19 — first author: 6 — citations: 545 — h-index: 12 (2020-12-22)

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) [6 citations] *student led project
- 18 Burkhart, B. *et al.* (incl. **DBF**), *The Catalogue for Astrophysical Turbulence Simulations (CATS)*, *ApJ*, **905**, 14, 2020 (arXiv:2010.11227)
- 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)
- 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) [8 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) [11 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) [16 citations]
- 12 Lochhaas, C. *et al.* (incl. **DBF**), *Properties of the simulated circumgalactic medium*, *MNRAS*, **493**, 1461, 2020 (arXiv:1908.00021) [8 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) [26 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) [46 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) [84 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) [53 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

- 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)

Honors and awards

Outstanding Graduate Student Instructor Award (2014)
NSF Graduate Research Fellowship (2014–2017 awarded 2012)
Berkeley Graduate Fellowship (2012–2014)
Donald E. Kerr Award for Outstanding Physics Undergraduate (2012)

Student advising

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

Founder and leader of *The Astro Club*, monthly meetings, 2020-, [Democracy Prep Charter Middle School](#), Harlem, NY
Astronomy career day, 2019, [Democracy Prep Charter Middle School](#), Harlem, NY
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

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

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

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)

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)