

## Drummond B. Fielding

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### OFFICE ADDRESS

Flatiron Institute  
Center for Computational Astrophysics  
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### HOME ADDRESS

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### EDUCATION

<i>Ph.D.</i> , Astrophysics University of California, Berkeley Advisor: Eliot Quataert Thesis: Interplay of Galactic Winds and Circumgalactic Media	2018
<i>Master of Arts</i> , Astrophysics University of California, Berkeley	2014
<i>Bachelors of Arts</i> , Physics & <i>Bachelors of Arts</i> , Mathematics Johns Hopkins University	2012

### EXPERIENCE

<i>Flatiron Research Fellow</i> , Center for Computational Astrophysics	2018 –
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### RESEARCH INTERESTS

- Astrophysical fluid dynamics using computational techniques.
- The circumgalactic medium; modeling its evolution and phase structure to establish its important role in galaxy formation and to improve interpretation of observations.
- Galactic winds; identifying their dominant driving mechanisms, and understanding their impact on the surrounding medium.

### AWARDS & HONORS

National Science Foundation Graduate Research Fellow	2014 - 2017 (awarded 2012)
Berkeley Fellow for Graduate Study	2012 - 2014
Outstanding Graduate Student Instructor Award	2013 - 2014
Donald E. Kerr Award for Outstanding Physics Undergraduate (JHU)	2012

### GRANTS

APS-IUSSTF Physics Ph.D. Student & Postdoc Visitation Program U.S.-India Travel Grant to Indian Institute of Science with Prof. Prateek Sharma	2016
Hubble Space Telescope cycle 25 Archival Research Grant <i>Towards an Understanding of the Origin of OVI in the Circumgalactic Medium</i> PI: Michael McCourt, Co-Is: Drummond Fielding, Peng Oh, Crystal Martin	2017
NSF Extreme Science and Engineering Discovery Environment (XSEDE) TG-AST160020 — 775,784 SUs on COMET TG-AST160020 — 1,732,096 SUs on COMET <i>The Physics of Supernova Feedback: Global 3D Simulations of Galactic Disks</i> PI: Davide Martizzi, Co-Is: Drummond Fielding, Eliot Quataert	2016-2018 2016 2017
NSF Extreme Science and Engineering Discovery Environment (XSEDE) TG-AST140083 — 1,159,956 SUs on Stampede <i>Conduction, Convection, and Thermal Instability in Hot Halos</i> PI: Michael McCourt, Co-I: Drummond Fielding	2016-2017

## PROFESSIONAL SERVICE & TEACHING

[Flatiron Pre-Doctoral Program](#) graduate student mentor 2019-  
Referee: ApJ, ApJL, MNRAS since 2016  
Graduate Student Instructor: Astronomy C12 ‘The Planets’, Astronomy 7A 2012, 2013

## SCIENCE OUTREACH

Led an astronomy career day event at [Democracy Prep Charter Middle School](#) in Harlem, NY 2019  
Taught a series of astronomy classes to 2nd and 3rd grade students 2017  
North Oakland Community Charter School  
Undergrad mentor UC Berkeley Astronomy 2016-2017  
UC Berkeley Astronomy Department Public Liason 2015  
*East Bay Astronomical Society* Public Lecture 2014  
Chabot Space and Science Center  
[The Berkeley Compass Project](#) Summer Evening Instructor 2013

## STUDENT MENTORING

[Iryna Butsky](#) — Graduate Student — University of Washington + CCA  
[Viraj Pandya](#) — Graduate Student — UC Santa Cruz + CCA  
[Matthew Abruzzo](#) — Graduate Student — Columbia  
[Zirui Chen](#) — Undergraduate Student — Columbia

## PUBLICATIONS

Full list can be found [here, on ads](#), or [here, on orcid](#)

### FIRST AUTHOR

**Drummond B. Fielding**, Stephanie Tonnesen, Daniel DeFelippis, Miao Li, Kung-Yi Su, Greg L. Bryan, Chang-Goo Kim, John C. Forbes, Rachel S. Somerville, Nicholas Battaglia, Evan E. Schneider, Yuan Li, Ena Choi, Christopher C. Hayward, and Lars Hernquist. First results from SMAUG: Uncovering the Origin of the Multiphase Circumgalactic Medium with a Comparative Analysis of Idealized and Cosmological Simulations. *arXiv e-prints*, page arXiv:2006.16316, June 2020  
**Drummond B. Fielding**, Eve C. Ostriker, Greg L. Bryan, and Adam S. Jermyn. Multiphase Gas and the Fractal Nature of Radiative Turbulent Mixing Layers. *ApJL*, 894(2):L24, May 2020  
**Drummond B. Fielding**, Eliot Quataert, and Davide Martizzi. Clustered supernovae drive powerful galactic winds after superbubble breakout. *MNRAS*, 481(3):3325–3347, December 2018  
**Drummond B. Fielding**, Eliot Quataert, Davide Martizzi, and Claude-André Faucher-Giguère. How supernovae launch galactic winds? *MNRAS*, 470(1):L39–L43, September 2017  
**Drummond B. Fielding**, Eliot Quataert, Michael McCourt, and Todd A. Thompson. The impact of star formation feedback on the circumgalactic medium. *MNRAS*, 466(4):3810–3826, April 2017  
**Drummond B. Fielding**, Christopher F. McKee, Aristotle Socrates, Andrew J. Cunningham, and Richard I. Klein. The turbulent origin of spin-orbit misalignment in planetary systems. *MNRAS*, 450(3):3306–3318, July 2015

### CONTRIBUTING AUTHOR

† students I mentored. ‡ students I co-mentored.

Chang-Goo Kim, Eve C. Ostriker, Rachel S. Somerville, Greg L. Bryan, **Drummond B. Fielding**, John C. Forbes, Christopher C. Hayward, Lars Hernquist, and Viraj Pandya. First results from SMAUG: Characterization of Multiphase Galactic Outflows from a Suite of Local Star-Forming Galactic Disk Simulations. *arXiv e-prints*, page arXiv:2006.16315, June 2020  
Viraj Pandya, Rachel S. Somerville, Daniel Anglés-Alcázar, Christopher C. Hayward, Greg L. Bryan, **Drummond B. Fielding**, John C. Forbes, Blakesley Burkhart, Shy Genel, Lars Hernquist, Chang-Goo Kim, Stephanie Tonnesen, and Tjitske Starkenburg. First results from SMAUG: The need for preventative stellar feedback and improved baryon cycling in semi-analytic models of galaxy formation. *arXiv e-prints*, page arXiv:2006.16317, June 2020

- Jonathan Stern, Claude-André Faucher-Giguère, **Drummond B. Fielding**, Eliot Quataert, Zachary Hafen, Alexander B. Gurvich, Xiangcheng Ma, Lindsey Byrne, Kareem El-Badry, Daniel Anglés-Alcázar, T. K. Chan, Robert Feldmann, Dušan Kereš, Andrew Wetzel, Norman Murray, and Philip F. Hopkins. Virialization of the inner CGM in the FIRE simulations and implications for galaxy discs, star formation and feedback. *arXiv e-prints*, page arXiv:2006.13976, June 2020
- Jonathan Stern, **Drummond B. Fielding**, Claude-André Faucher-Giguère, and Eliot Quataert. The maximum accretion rate of hot gas in dark matter haloes. *MNRAS*, 492(4):6042–6058, March 2020
- Jonathan Stern, **Drummond B. Fielding**, Claude-André Faucher-Giguère, and Eliot Quataert. Cooling flow solutions for the circumgalactic medium. *MNRAS*, 488(2):2549–2572, September 2019
- Cassandra Lochhaas, Greg L. Bryan, Yuan Li, Miao Li, and **Drummond B. Fielding**. Properties of the simulated circumgalactic medium. *MNRAS*, 493(1):1461–1478, March 2020
- Davide Martizzi, Eliot Quataert, Claude-André Faucher-Giguère, and **Drummond B. Fielding**. Simulations of jet heating in galaxy clusters: successes and challenges. *MNRAS*, 483(2):2465–2486, February 2019
- Jonathan Stern, Claude-André Faucher-Giguère, Joseph F. Hennawi, Zachary Hafen, Sean D. Johnson, and **Drummond B. Fielding**. 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(2):91, October 2018
- Davide Martizzi, **Drummond B. Fielding**, Claude-André Faucher-Giguère, and Eliot Quataert. Supernova feedback in a local vertically stratified medium: interstellar turbulence and galactic winds. *MNRAS*, 459(3):2311–2326, July 2016
- Stella S. R. Offner, Michael M. Dunham, Katherine I. Lee, Héctor G. Arce, and **Drummond B. Fielding**. The Turbulent Origin of Outflow and Spin Misalignment in Multiple Star Systems. *ApJL*, 827(1):L11, August 2016
- Joshua E. Schlieder, Sébastien Lépine, Emily Rice, Michal Simon, **Drummond B. Fielding**, and Rachael Tomasino. The Na 8200 Å Doublet as an Age Indicator in Low-mass Stars. *AJ*, 143(5):114, May 2012

## SELECT PRESENTATIONS

\* denotes an invited talk.

- 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)
- Contributed Talk*, Turbulence workshop, Aspen CO (6/2019)
- Contributed Talk*, CGM/IGM conference, Spineto Italy (6/2019)
- \**Invited Talk*, athena++ conference, Las Vegas NV (3/2019)
- Lunch Talk*, CCA, New York NY (12/2018)
- \**Invited Talk*, CGM conference, Northwestern, Chicago IL (8/2018)
- \**Invited Talk*, CGM/DLA conference, Big Sur CA (3/2018)
- Lunch Talk*, CCA, New York NY (11/2017)
- TAPIR Seminar*, Caltech, Pasadena CA (11/2017)
- Hernquist group meeting*, Harvard CfA, Cambridge MA (10/2017)
- SFIR Seminar*, Princeton University (10/2017)
- FLASH Seminar*, U.C. Santa Cruz (10/2017)
- Astronomy Seminar*, University of Washington (10/2017)
- Contributed Talk*, UCSC Galaxy Workshop (8/2017)
- IMPS seminar*, U.C. Santa Cruz (5/2017)

*\*Astronomy Seminar*, Raman Research Institute (12/2016)

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

*Lunch Talk* U.C. Berkeley (10/2016)

*Astronomy Seminar* U.C. Santa Barbara (9/2016)

*Contributed Talk*, Crossing the Rubicon, Italy (9/2016)

*Contributed Talk*, U.C. Santa Cruz Galaxy Workshop, Santa Cruz CA (8/2016)

*Galaxy Group Seminar*, University of Michigan, Ann Arbor MI (3/2016)

*Lunch Talk* U.C. Berkeley, Berkeley, CA (12/2013)