Michael K. McCourt

Broida Hall, University of California, Santa Barbara, CA 93106-9530
☎ 310-923-2656 ✉ mkmccjr@gmail.com astro.berkeley.edu/~mkmcc

Education

May 2014	Ph. D. in Astrophysics *UC Berkeley* advisor: Eliot Quataert
May 2010	M. A. in Astrophysics *UC Berkeley*
June 2008	B. S. in Physics *Stanford University* concentration in theoretical physics advisor: Roger Blandford

Awards

UC Berkeley
- Mary Elizabeth Uhl Prize, April 2014
- The Robert J. Trumpler Graduate Student Excellence Award, May 2012

The Rose Hills Foundation
- Rose Hills Award for Undergraduate Research, Summer 2007

Stanford University
- Nomination for the Churchill Scholarship, Fall 2007
- VPUE Grant for Undergraduate Research, Summer 2006

Research Positions

Sept 2015—present	Postdoc UC Santa Barbara - advisor: Peng Oh
Sept 2014—July 2015	ITC Fellow Harvard-Smithsonian Center for Astrophysics
June 2009—August 2014	Graduate Student Researcher Theoretical Astrophysics Ceneter, UC Berkeley - advisor: Eliot Quataert
June 2006—March 2008	Undergraduate Researcher Kavli Institute for Particle Astrophysics and Cosmology (KIPAC) - advisors: Roger Blandford & Maruša Bradač
April 2005—May 2006	Undergraduate Researcher Geballe Laboratory for Advanced Materials - advisor: Ian Fisher

Publications

16. Madigan & **McCourt**, *submitted*
On the formation of the inner oort cloud

15. Lecoanet, **McCourt**, Quataert, Burns, Vasil, Oishi, Brown, Stone, & O'Leary, *submitted*
A Validated Nonlinear Kelvin-Helmholtz Benchmark

14. Guillochon, **McCourt**, Chen, Johnson, & Berger, *submitted*
Unbound debris streams and remnants resulting from the tidal disruptions of stars by supermassive black holes

13. **McCourt** & Madigan, *MNRAS accepted* (2015)
*Going with the flow: using gas clouds to probe the accretion flow feeding Sgr A**

12. **McCourt**, O'Leary, Madigan & Quataert, *MNRAS* **449**:1 (2015)
Magnetized Gas Clouds can Survive Disruption by Hot, Fast Winds.

11. McBride & **McCourt**, *MNRAS* **442**:1 (2014)
Bent radio jets reveal a stripped interstellar medium in NGC 1272

10. Wagh, Sharma, & **McCourt**, *MNRAS* **439**:3 (2014)
Thermal Conduction and Multiphase Gas in Cluster Cores

9. **McCourt**, Quataert, Parrish, Sharma, *MNRAS* **432**:1 (2013)
What sets temperature gradients in galaxy clusters? Implications for non-thermal pressure support and mass-observable scaling relations

8. Sharma, **McCourt**, Parrish, Quataert, *MNRAS* **427**:2 (2012)
On the structure of hot gas in haloes: implications for the L_X-T_X relation and missing baryons

7. Parrish, **McCourt**, Quataert, Sharma, *MNRAS* **422**:1 (2012)
The effects of anisotropic viscosity on turbulence and heat transport in the intracluster medium

6. Sharma, **McCourt**, Quataert, Parrish, *MNRAS* **420**:4 (2012)
Thermal instability and the feedback regulation of hot haloes in clusters, groups and galaxies

5. **McCourt**, Sharma, Quataert, Parrish, *MNRAS* **419**:4 (2012)
Thermal instability in gravitationally stratified plasmas: implications for multiphase structure in clusters and galaxy haloes

4. Parrish, **McCourt**, Quataert, Sharma, *MNRAS* **419**:1 (2012)
Turbulent pressure support in the outer parts of galaxy clusters

3. **McCourt**, Parrish, Quataert, Sharma, *MNRAS* **413**:2 (2011)
Can conduction induce convection? On the non-linear saturation of buoyancy instabilities in dilute plasmas

2. Bradač, Schrabback, Erben, **McCourt**, et al., *Ap. J.* **681**:1 (2008)
Dark Matter and Baryons in the X-Ray Luminous Merging Galaxy Cluster RX J1347.5-1145

1. Samulon, Islam, Sebastian, et al., *Phys. Rev. B* **73**:10 (2006)
Low-temperature structural phase transition and incommensurate lattice modulation in the spin-gap compound $BaCuSi_2O_6$

Publications in Preparation

1. **McCourt** & Quataert, *in prep.*
   Conductive Evaporation from the Most Massive Galaxy Clusters.
2. **McCourt** & Quataert, *in prep.*
   Convection in Galaxy Clusters.
3. Fielding, **McCourt**, & Quataert, *in prep.*
   The multi-phase CGM
4. Madigan & **McCourt**, *in prep.*
   A new inclination instability in Keplerian disks
5. Guillochon & **McCourt**, *in prep.*
   The Consequences of Including a Magnetic Field Within a Tidally-Disrupted Star
6. O'Leary, **McCourt**, Madigan & Quataert, *in prep.*
   Magnetohydrodynamic Cloud-Wind Interactions.
7. Parrish, **McCourt**, & Quataert, *in prep.*
   Scatter in Cluster Mass-Observables due to Variations in Accretion Histories

Selected Talks and Presentations

20. Lunch Talk — April 2015
    Harvard ITC
19. Pizza Lunch — April 2015
    Harvard ITC
18. Lunch Talk — April 2015
    UC Santa Barbara
17. Lunch Talk — March 2015
    UC Berkeley
16. Contributed Talk — January 2015
    Black Holes in Dense Star Clusters
15. Cosmology Seminar — September 2014
    Yale
14. Astrophysics Seminar — September 2014
    CIERA, Northwestern University
13. Lunch Talk — February 2014
    UC Berkeley

12. Seminar — October 2013
TAPIR, Caltech

11. "Tea Talk" — October 2013
Kavli Institute for Particle Astrophysics and Cosmology, Stanford Linear Accelerator

10. ITC Seminar — September 2013
Institute for Theory and Computation, Harvard-Smithsonian Center for Astrophysics
"Do Galaxy Clusters Boil?"

9. Geo- and Astro-physical Fluid Dynamics Seminar — April 2013
Applied Math Department, UC Santa Cruz
"Thermal Instability and Gravity Waves in Galaxy Clusters"

8. Invited Talk — March 2013
SnowCluster Conference, SnowBird Utah
"Sculpting Cosmic Gas into Clusters"

7. Astronomy Seminar — October 2012
Kavli Institute for Theoretical Physics, UC Santa Barbara

6. Theory Seminar — October 2012
Canadian Institute for Theoretical Astrophysics, Toronto

5. Seminar — October 2012
Institute for Advanced Study, Princeton University
"Sculpting Cosmic Gas into Clusters"

4. Invited Talk — August 2012
2nd ICM Theory & Computation Workshop, University of Michigan
"Cool Cores, Conduction, and Accretion Shocks: Cluster Formation from the Inside Out"

3. Theory Lunch Talk — April 2011
Kavli Institute for Theoretical Physics, UC Santa Barbara
"Thermal Instability, Conduction, and Feedback in Halos"

2. Contributed Talk — August 2010
ICM Theory & Computation Workshop, University of Michigan
"Nonlinear Saturation of the MTI and HBI in Dilute Magnetized Plasmas (i. e., clusters!)"

1. "Tea Talk" — August 2006
Stanford University Physics Department
"Ready for the Guiness Book of Records: Is the most X-ray luminous cluster RXJ 1347.5-1145 also the most massive?"

Professional Service

- Organizer ("Mentor Master") for the UC Berkeley Astronomy department peer mentoring system.
- Referee for the *Astrophysical Journal*, *MNRAS*, *Astrophysics and Space Science*, and *Nature Letters*.
- Author of several open-source emacs packages, including a mode for editing gnuplot scripts and a browser for fetching BibTeX entries from ADS. Both are available in the MELPA package repository.

Teaching Experience

August 2008—June 2009 — Graduate Student Instructor, UC Berkeley

March 2008—June 2008 — Undergraduate Instructor, Stanford University
- Co-designed and taught a quarter-long course on Mathematica (Physics 90SI) under the student-initiated course program.