

CURRICULUM VITAE  
**JULIA M. COMERFORD**

Assistant Professor  
Department of Astrophysical and Planetary Sciences  
University of Colorado, Boulder  
Boulder, CO 80309

Email: Julie.Comerford@colorado.edu

EMPLOYMENT

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Assistant Professor, University of Colorado, Boulder	2013 - present
NSF Astronomy and Astrophysics Postdoctoral Fellow, UT Austin	2011 - 2013
W.J. McDonald Postdoctoral Fellow, UT Austin	2010 - 2011

EDUCATION

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Ph.D. in Astrophysics, University of California, Berkeley	2009
M.A. in Astrophysics, University of California, Berkeley	2004
A.B. in Astrophysical Sciences, Princeton University	2002

FELLOWSHIPS & AWARDS

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NSF Astronomy and Astrophysics Postdoctoral Fellowship, UT Austin	2011 - 2013
W.J. McDonald Postdoctoral Fellowship, UT Austin	2010 - 2011
American Astronomical Society Division on Dynamical Astronomy Raynor L. Duncombe Prize for Student Research	2009
American Astronomical Society Chambliss Astronomy Achievement Award	2008
National Science Foundation Graduate Research Fellowship	2004 - 2007
Teaching Effectiveness Award, UC Berkeley	2006
American Association of Physics Teachers Outstanding Teaching Assistant, one of 48 awarded nationwide	2005
Outstanding Graduate Student Instructor, UC Berkeley	2005
Bell Labs Graduate Research Fellowship	2002 - 2004

FIRST AUTHOR PUBLICATIONS

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14. *“The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei IV: Association with Galaxy Mergers”*  
**Julia M. Comerford**, Rebecca Nevin, Aaron Stemo, Francisco Müller-Sánchez, R. Scott Barrows, Michael C. Cooper, & Jeffrey A. Newman, 2018, ApJ, 867, 66
13. *“An Active Galactic Nucleus Caught in the Act of Turning Off and On”*  
**Julia M. Comerford**, R. Scott Barrows, Francisco Müller-Sánchez, Rebecca Nevin, Jenny E. Greene, David Pooley, Daniel Stern, & Fiona Harrison, 2017, ApJ, 849, 102
12. *“Shocks and Spatially Offset Active Galactic Nuclei Produce Velocity Offsets in Emission Lines”*  
**Julia M. Comerford**, R. Scott Barrows, Jenny E. Greene, & David Pooley, 2017, ApJ, 847, 41

11. “*Merger-driven Fueling of Active Galactic Nuclei: Six Dual and Offset Active Galactic Nuclei Discovered with Chandra and Hubble Space Telescope Observations*”  
**Julia M. Comerford**, David Pooley, R. Scott Barrows, Jenny E. Greene, Nadia L. Zakamska, Greg M. Madejski, & Michael C. Cooper, 2015, ApJ, 806, 219
10. “*Offset Active Galactic Nuclei as Tracers of Galaxy Mergers and Supermassive Black Hole Growth*”  
**Julia M. Comerford** & Jenny E. Greene, 2014, ApJ, 789, 112
9. “*Dual Supermassive Black Hole Candidates in the AGN and Galaxy Evolution Survey*”  
**Julia M. Comerford**, Kyle Schluns, Jenny E. Greene, & Richard J. Cool, 2013, ApJ, 777, 64
8. “*Kiloparsec-scale Spatial Offsets in Double-peaked Narrow-line Active Galactic Nuclei. I. Markers for Selection of Compelling Dual Active Galactic Nucleus Candidates*”  
**Julia M. Comerford**, Brian F. Gerke, Daniel Stern, Michael C. Cooper, Benjamin J. Weiner, Jeffrey A. Newman, Kristin Madsen, & R. Scott Barrows, 2012, ApJ, 753, 42
7. “*Chandra Observations of a 1.9 kpc Separation Double X-ray Source in a Candidate Dual AGN Galaxy at  $z=0.16$* ”  
**Julia M. Comerford**, David Pooley, Brian F. Gerke, & Greg M. Madejski, 2011, ApJ, 737, L19
6. “*Observed Scaling Relations for Strong Lensing Clusters: Consequences for Cosmology and Cluster Assembly*”  
**Julia M. Comerford**, Leonidas A. Moustakas, & Priyamvada Natarajan, 2010, ApJ, 715, 162
5. “ *$1.75 h^{-1}$  kpc Separation Dual Active Galactic Nuclei at  $z=0.36$  in the COSMOS Field*”  
**Julia M. Comerford**, Roger L. Griffith, Brian F. Gerke, Michael C. Cooper, Jeffrey A. Newman, Marc Davis, & Daniel Stern, 2009, ApJ, 702, L82
4. “*Inspiralling Supermassive Black Holes: A New Signpost for Galaxy Mergers*”  
**Julia M. Comerford**, Brian F. Gerke, Jeffrey A. Newman, Marc Davis, Renbin Yan, Michael C. Cooper, S.M. Faber, David C. Koo, Alison L. Coil, D.J. Rosario, & Aaron A. Dutton, 2009, ApJ, 698, 956
3. “*The Observed Concentration-Mass Relation for Galaxy Clusters*”  
**Julia M. Comerford** & Priyamvada Natarajan, 2007, MNRAS, 379, 190
2. “*Mass Distributions of Hubble Space Telescope Galaxy Clusters from Gravitational Arcs*”  
**Julia M. Comerford**, Massimo Meneghetti, Matthias Bartelmann, & Mischa Schirmer, 2006, ApJ, 642, 39
1. “*Constraining the Redshift  $z\sim 6$  Quasar Luminosity Function Using Gravitational Lensing*”  
**Julia M. Comerford**, Zoltán Haiman, & Joop Schaye, 2002, ApJ, 580, 63

## OTHER PUBLICATIONS

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36. “*Accurate Identification of Galaxy Mergers with Imaging*”  
Rebecca Nevin, Laura Blecha, **Julia M. Comerford**, & Jenny E. Greene, 2018, ApJ submitted

35. “*Spatially Offset Active Galactic Nuclei III: Discovery of Late-Stage Galaxy Mergers with the Hubble Space Telescope*”  
R. Scott Barrows, **Julia M. Comerford**, & Jenny E. Greene, 2018, ApJ accepted
34. “*Two Separate Outflows in the Dual Supermassive Black Hole System NGC 6240*”  
Francisco Müller-Sánchez, Rebecca Nevin, **Julia M. Comerford**, Richard Davies, George C. Privon, & Ezequiel Treister, 2018, Nature, 556, 345
33. “*Optical, Near-IF and Sub-mm IFU Observations of the Nearby Dual AGN Mrk 463*”  
Ezequiel Treister, George C. Privon, Lisa F. Sartori, Neil Nagar, Franz E. Bauer, Kevin Schawinski, Hugo Messias, Claudio Ricci, Vivian U, Caitlin Casey, **Julia M. Comerford**, Francisco Müller-Sánchez, Aaron S. Evans, Carolina Finlez, Michael Koss, David B. Sanders, & C. Megan Urry, 2018, ApJ, 854, 83
32. “*The Fourteenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the extended Baryon Oscillation Spectroscopic Survey and from the second phase of the Apache Point Observatory Galactic Evolution Experiment*”  
Abolfathi et al. (**JMC** is 66 out of 348 authors), 2018, ApJS, 235, 42
31. “*The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei III: Feedback from Biconical Outflows*”  
Rebecca Nevin, **Julia M. Comerford**, Francisco Müller-Sánchez, R. Scott Barrows, & Michael C. Cooper, 2018, MNRAS, 473, 2160
30. “*The Thirteenth Data Release of the Sloan Digital Sky Survey: First Spectroscopic Data from the SDSS-IV Survey Mapping Nearby Galaxies at Apache Point Observatory*”  
Albareti et al. (**JMC** is 56 out of 338 authors), 2017, ApJS, 233, 25
29. “*Investigating the Evolution of the Dual AGN System ESO 509-IG066*”  
P. Kosec, M. Brightman, D. Stern, F. Müller-Sánchez, M. Koss, K. Oh, R.J. Assef, P. Gandhi, F.A. Harrison, H. Jun, A. Masini, C. Ricci, D.J. Walton, **J. Comerford**, & G. Privon, 2017, ApJ, 850, 168
28. “*Observational Constraints on Correlated Star-formation and Active Galactic Nuclei in Late-stage Galaxy Mergers*”  
R. Scott Barrows, **Julia M. Comerford**, Nadia L. Zakamska, & Michael C. Cooper, 2017, ApJ, 850, 27
27. “*Space Telescope and Optical Reverberation Mapping Project. VII. Understanding the UV Anomaly in NGC 5548 with X-ray Spectroscopy*”  
Smitha Mathur et al. (**JMC** is 27 out of 150 authors), 2017, ApJ, 846, 55
26. “*Spatially Offset Active Galactic Nuclei II: Triggering in Galaxy Mergers*”  
R. Scott Barrows, **Julia M. Comerford**, Jenny E. Greene, & David Pooley, 2017, ApJ, 838, 129
25. “*Space Telescope and Optical Reverberation Mapping Project. V. Optical Spectroscopic Campaign and Emission-line Analysis for NGC 5548*”  
Liuyi Pei et al. (**JMC** is 28 out of 156 authors), 2017, ApJ, 837, 131

24. “*The Origin of Double-Peaked Narrow Lines in Active Galactic Nuclei II: Kinematic Classifications for the Population at  $z < 0.1$* ”  
Rebecca Nevin, **Julia M. Comerford**, Francisco Müller-Sánchez, R. Scott Barrows, & Michael C. Cooper, 2016, ApJ, 832, 67
23. “*The Nature of Active Galactic Nuclei with Velocity Offset Emission Lines*”  
Francisco Müller-Sánchez, **Julia M. Comerford**, Daniel Stern, & Fiona A. Harrison, 2016, ApJ, 830, 50
22. “*Spatially Offset Active Galactic Nuclei I: Selection and Spectroscopic Properties*”  
R. Scott Barrows, **Julia M. Comerford**, Jenny E. Greene, & David Pooley, 2016, ApJ, 829, 37
21. “*Origin and Properties of Dual and Offset AGN in a Cosmological Simulation at  $z=2$* ”  
Lisa K. Steinborn, Klaus Dolag, **Julia M. Comerford**, Michaela Hirschmann, Rhea-Silvia Remus, & Adelheid F. Teklu, 2016, MNRAS, 458, 1013
20. “*The Origin of Double-peaked Emission Lines in Active Galactic Nuclei I: Very Large Array Detections of Dual AGNs and AGN Outflows*”  
Francisco Müller-Sánchez, **Julia M. Comerford**, Rebecca Nevin, R. Scott Barrows, Michael C. Cooper, & Jenny E. Greene, 2015, ApJ, 813, 2
19. “*Spatially Resolved Imaging and Spectroscopy of Candidate Dual Active Galactic Nuclei*”  
Rosalie C. McGurk, Claire E. Max, Anne M. Medling, Gregory A. Shields, & **Julia M. Comerford**, 2015, ApJ, 811, 14
18. “*Extended X-ray Emission from a Quasar-driven Superbubble*”  
Jenny E. Greene, David Pooley, Nadia L. Zakamska, **Julia M. Comerford**, & Ai-Lei Sun, 2014, ApJ, 788, 54
17. “*Constraints on Two Active Galactic Nuclei in the Merger Remnant COSMOS J100043.15+020637.2*”  
Joan M. Wrobel, **Julia M. Comerford**, & Enno Middelberg, 2014, ApJ, 782, 116
16. “*The Stellar Halos of Massive Elliptical Galaxies II: Detailed Abundance Ratios at Large Radius*”  
Jenny E. Greene, Jeremy D. Murphy, Genevieve J. Graves, James E. Gunn, Sudhir Raskutti, **Julia M. Comerford**, & Karl Gebhardt, 2013, ApJ, 776, 64
15. “*Identification of Outflows and Candidate Dual Active Galactic Nuclei in SDSS Quasars at  $z=0.8-1.6$* ”  
R. Scott Barrows, Claud H. Sandberg Lacy, Julia Kennefick, **Julia M. Comerford**, Daniel Kennefick, & Joel C. Berrier, 2013, ApJ, 769, 95
14. “*PHIBSS: Molecular Gas, Extinction, Star Formation and Kinematics in the  $z=1.5$  Star Forming Galaxy EGS13011166*”  
Reinhard Genzel, Linda J. Tacconi, Jason Kurk, Stijn Wuyts, Françoise Combes, Jonathan Freundlich, Alberto Bolatto, Michael C. Cooper, Roberto Neri, Raanan Nordon, Frédéric Bournaud, Andreas Burkert, **Julia M. Comerford**, Pierre Cox, Marc Davis, Natascha M. Förster Schreiber, Santiago García-Burillo, Javier Gracia-Carpio, Dieter Lutz, Thorsten Naab, Sarah Newman, Amélie Saintonge, Kristen Shapiro Griffin, Alice Shapley, Amiel Sternberg, & Benjamin Weiner, 2013, ApJ, 773, 68

13. “*PHIBSS: Molecular Gas Content and Scaling Relations in  $z=1-3$  Normal Star Forming Galaxies*”

Linda J. Tacconi, Roberto Neri, Reinhard Genzel, Françoise Combes, Alberto Bolatto, Michael C. Cooper, Stijn Wuyts, Frédéric Bournaud, Andreas Burkert, **Julia M. Comerford**, Pierre Cox, Marc Davis, Natascha M. Förster Schreiber, Santiago García-Burillo, Javier Gracia-Carpio, Dieter Lutz, Thorsten Naab, Sarah Newman, Alain Omont, Amélie Saintonge, Kristen Shapiro Griffin, Alice Shapley, Amiel Sternberg, & Benjamin Weiner, 2013, ApJ, 768, 74

12. “*Submillimeter Follow-up of WISE-selected Hyperluminous Galaxies*”

Jingwen Wu, Chao-Wei Tsai, Jack Sayers, Dominic Benford, Carrie Bridge, Andrew Blain, Peter R.M. Eisenhardt, Daniel Stern, Sara Petty, Roberto Assef, Shane Bussmann, **Julia M. Comerford**, Roc Cutri, Neal J. Evans II, Roger Griffith, Thomas Jarrett, Sean Lake, Carol Lonsdale, Jeonghee Rho, S. Adam Stanford, Benjamin Weiner, Edward L. Wright, & Lin Yan, 2012, ApJ, 756, 96

11. “*The Advanced Camera for Surveys General Catalog: Structural Parameters for Approximately Half a Million Galaxies*”

Roger L. Griffith, Michael C. Cooper, Jeffrey A. Newman, Leonidas A. Moustakas, Daniel Stern, **Julia M. Comerford**, Marc Davis, Jennifer M. Lotz, Marco Barden, Christopher J. Conselice, Peter L. Capak, S.M. Faber, J. Davy Kirkpatrick, Anton M. Koekemoer, David C. Koo, Kai G. Noeske, Nick Scoville, Kartik Sheth, Patrick Shopbell, Christopher N.A. Willmer, & Benjamin Weiner, 2012, ApJS, 200, 9

10. “*The Stellar Halos of Massive Elliptical Galaxies*”

Jenny E. Greene, Jeremy D. Murphy, **Julia M. Comerford**, Karl Gebhardt, & Joshua J. Adams, 2012, ApJ, 750, 32

9. “*A Candidate Dual Active Galactic Nucleus at  $z=1.175$* ”

R. Scott Barrows, Daniel Stern, Kristin Madsen, Fiona Harrison, J. Roberto Assef, **Julia M. Comerford**, Michael C. Cushing, Christopher D. Fassnacht, Anthony Gonzalez, Roger Griffith, Ryan Hickox, J. Davy Kirkpatrick, & David J. Lagattuta, 2012, ApJ, 744, 7

8. “*Systematic Blueshift of Line Profiles in the Type II<sub>n</sub> Supernova 2010jl: Evidence for Post-shock Dust Formation?*”

Nathan Smith, Jeffrey M. Silverman, Alexei V. Filippenko, Michael C. Cooper, Thomas Matheson, Fuyan Bian, Benjamin J. Weiner, & **Julia M. Comerford**, 2012, AJ, 143, 17

7. “*The Metallicity Dependence of the  $CO \rightarrow H_2$  Conversion Factor in  $z \geq 1$  Star Forming Galaxies*”

Reinhard Genzel, Linda J. Tacconi, Françoise Combes, Alberto Bolatto, Roberto Neri, Amiel Sternberg, Michael C. Cooper, Nicolas Bouché, Frédéric Bournaud, Andreas Burkert, **Julia M. Comerford**, Pierre Cox, Marc Davis, Natascha M. Förster Schreiber, Santiago García-Burillo, Javier Gracia-Carpio, Dieter Lutz, Thorsten Naab, Sarah Newman, Amélie Saintonge, Kristen Shapiro, Alice Shapley, & Benjamin Weiner, 2012, ApJ, 746, 69

6. “*Broad-line Reverberation in the Kepler-field Seyfert Galaxy Zw 229-015*”

Aaron J. Barth, My L. Nguyen, Matthew A. Malkan, Alexei V. Filippenko, Weidong Li, Varoujan, Gorjian, Michael D. Joner, Vardha Nicola Bennert, Janos Botyanszki, S. Bradley Cenko, Michael Childress, Jieun Choi, **Julia M. Comerford**, & 35 others, 2011, ApJ, 732, 121

5. “*A Study of the Gas-Star Formation Relation over Cosmic Time*”

Reinhard Genzel, Linda J. Tacconi, Javier Gracia-Carpio, Amiel Sternberg, Michael C. Cooper, Kristen L. Shapiro, Alberto Bolatto, Nicolas Bouché, Frédéric Bournaud, Andreas Burkert, Françoise Combes, **Julia M. Comerford**, Pierre Cox, Marc Davis, Natascha M. Förster Schreiber, Santiago García-Burillo, Dieter Lutz, Thorsten Naab, Roberto Neri, Alain Omont, Alice Shapley, & Benjamin Weiner, 2010, MNRAS, 407, 209

4. “*High Molecular Gas Fractions in Normal Massive Star Forming Galaxies in the Young Universe*”

Linda J. Tacconi, Reinhard Genzel, Roberto Neri, Pierre Cox, Michael C. Cooper, Kristen L. Shapiro, Alberto Bolatto, Nicolas Bouché, Frédéric Bournaud, Andreas Burkert, Françoise Combes, **Julia M. Comerford**, Marc Davis, Natascha M. Förster Schreiber, Santiago García-Burillo, Javier Gracia-Carpio, Dieter Lutz, Thorsten Naab, Alain Omont, Alice Shapley, Amiel Sternberg, & Benjamin Weiner, 2010, Nature, 463, 781

3. “*SDSS J1536+0441: An Extreme Double Peaked Emitter, Not a Binary Black Hole*”

Ryan Chornock, Joshua S. Bloom, Stephen B. Cenko, Jeffrey M. Silverman, Alexei V. Filippenko, Michael D. Hicks, Kenneth J. Lawrence, Philip Chang, **Julia M. Comerford**, Matthew R. George, Maryam Modjaz, Jeffrey S. Oishi, Eliot Quataert, & Linda E. Strubbe, 2009, The Astronomer’s Telegram, #1955

2. “*Comparisons between Isothermal and NFW Mass Profiles for Strong-Lensing Galaxy Clusters*”

Chenggang Shu, Binglu Zhou, Matthias Bartelmann, **Julia M. Comerford**, J.-S. Huang, & Yannick Mellier, 2008, ApJ, 685, 70

1. “*Antibias in Clusters: The Dependence of the Mass-to-Light Ratio on Cluster Temperature*”

Neta A. Bahcall & **Julia M. Comerford**, 2002, ApJ, 565, L5

## GRANTS AS PI

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Chandra X-ray Observatory	2018
NSF AAG	2017
Chandra X-ray Observatory	2016
Hubble Space Telescope	2015
ASSETT Development Award, CU Boulder	2015
Strategic University Research Partnership, Colorado/JPL	2015
NASA Astrophysics Data Analysis Program	2014
Chandra X-ray Observatory	2014
Chandra X-ray Observatory	2013
Hubble Space Telescope	2013
Chandra X-ray Observatory	2011
Hubble Space Telescope	2011

## INVITED COLLOQUIA

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Montana State University	Sep. 21, 2018
New York University (Astrophysics Seminar)	Oct. 20, 2017
Texas A&M (Astronomy Seminar)	Sep. 25, 2017

University of Washington	Jan. 12, 2017
Caltech	Oct. 12, 2016
National Radio Astronomy Observatory (NRAO); Socorro, NM	Apr. 29, 2016
University of Arizona	Mar. 10, 2016
University of Denver	May 13, 2015
University of Utah (High Energy and Astrophysics Seminar)	Dec. 5, 2014
University of Utah	Dec. 4, 2014
Harvard CfA	Nov. 13, 2014
Jet Propulsion Laboratory / Caltech	Oct. 23, 2014
University of California, Irvine (Astrophysics Seminar)	Dec. 3, 2013
University of Wyoming	Oct. 25, 2013
MIT	Oct. 22, 2013
Columbia University	Oct. 3, 2012
Harvard CfA/ITC	Sep. 20, 2012
University of Illinois	Mar. 27, 2012
University of Nevada, Las Vegas	Mar. 1, 2012
University of Colorado, Boulder	Feb. 23, 2012
NASA Goddard Space Flight Center	Feb. 14, 2012
University of Michigan	Feb. 2, 2012
Penn State University	Oct. 13, 2010

## INVITED CONFERENCE TALKS

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AAS plenary talk, Denver, CO	Jun. 6, 2018
Very Long Baseline Interferometry Futures meeting, Lubbock, TX	Mar. 13, 2018
Merging Galaxies and Gravitational Waves: From Mpc to mpc, Grapevine, TX	Jan. 3-7, 2017
The Physics of Supermassive Black Hole Formation and Feedback, Annapolis, MD	Oct. 12-14, 2015
Unveiling the AGN/Galaxy Evolution Connection, Puerto Varas, Chile	Mar. 9-13, 2015
Massive Black Holes: Birth, Growth, and Impact, Santa Barbara, CA	Aug. 5-9, 2013
A Universe of Black Holes, Santa Barbara, CA	Jul. 11, 2013
Binary Black Holes and Dual AGN, Tucson, AZ	Nov. 29-30, 2012
Galaxy Mergers from the Largest to the Smallest Scales, Anchorage, AK	Jun. 11-14, 2012
Interacting Galaxies and Binary Quasars, Trieste, Italy	Apr. 2-5, 2012
Fellows at the Frontiers of Astronomy, Evanston, IL	Aug. 31 – Sep. 3, 2011
Single and Double Black Holes in Galaxies, Ann Arbor, MI	Aug. 22-25, 2011

## STUDENTS AND POSTDOCS ADVISED

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Jimmy Negus	graduate student	2017 - present
Aaron Stemo	graduate student	2016 - present
Francisco Müller-Sánchez	postdoc	2013 - 2018
Scott Barrows	postdoc	2013 - present
Rebecca Nevin	graduate student	2013 - present
Skyler Shaver (honors thesis)	undergraduate	2015 - 2016
Brian Davis (UROP and honors thesis)	undergraduate	2015 - 2016
Jordan Seneca (UROP)	undergraduate	2015
Kirsten Pederson	undergraduate	2014

Kyle Schluns	undergraduate	2011 - 2013
James Diekmann	undergraduate	2010 - 2013

## CU BOULDER TEACHING

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ASTR 5720: Galaxies (graduate)		Spring 2014, Spring 2018
ASTR 3830: Astrophysics 2 – Galactic and Extragalactic (undergraduate majors)	Spring 2015, Spring 2016, Spring 2019	
ASTR 2030: Black Holes (undergraduate nonmajors)		Spring 2017, Fall 2018
ASTR 2010: Modern Cosmology (undergraduate nonmajors)	Fall 2013, Fall 2015, Fall 2016, Fall 2017	
ASTR 6000: Astrophysics Seminar (graduate)		Fall 2015

## PROFESSIONAL SERVICE

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One of four organizers (and the “organizer in charge of diversity”) for “The Astrophysics of Massive Black Hole Mergers: From Galaxy Mergers to the Gravitational Wave Regime”, a workshop at the Aspen Center for Physics		2018
SOC member for the conference “Astrophysical Frontiers in the Next Decade and Beyond”		2017 - 2018
Session chair for “Probing Early-type Galaxies”, AAS		2016
Panel reviewer for Chandra		2014
Panel reviewer for NSF	2013, 2014, 2016, 2017, 2018	
Reviewer for data analytics textbook		2012 - 2013
Referee for ApJ, ApJ Letters, ApJ Supplement, MNRAS, MNRAS Letters, Nature, Science		2010 - present