

MATTHEW W. KUNZ

Princeton University, Dept. of Astrophysical Sciences
4 Ivy Lane, Peyton Hall
Princeton, NJ 08544

Email: kunz@astro.princeton.edu
WWW: <http://www.astro.princeton.edu/~kunz/Site/Welcome.html>

Academic positions

- 2021– Associate Professor of Astrophysical Sciences, Princeton University
- 2015–21 Assistant Professor of Astrophysical Sciences, Princeton University
- 2014–15 Lyman Spitzer, Jr. Postdoctoral Research Associate, Princeton University
- 2011–14 NASA Einstein Postdoctoral Fellow; Fellowship Sponsor: J. Stone
- 2010–11 Junior Research Fellow, University of Oxford, Mansfield College
- 2009–11 Postdoctoral Research Associate, Rudolf Peierls Centre for Theoretical Physics, Oxford; Advisor: A. Schekochihin

Education

- University of Illinois at Urbana-Champaign (UIUC) – MS Physics, 2004; PhD Physics, 2009
PhD Thesis: *The nonisothermal stage of magnetic star formation*; Advisor: T. Mouschovias
- University of Virginia (UVa) – BA Astronomy-Physics with High Distinction (Minor Math), 2003
Thesis: *Ambipolar diffusion and the magnetorotational instability*; Advisor: S. Balbus
- University of Virginia (UVa) – BA Music, 2003; Advisor: W. Ross

Honors and awards

- 2020–25 NSF Faculty Early Career Development Program (CAREER) Award
- 2017–20 Alfred P. Sloan Research Fellowship in Physics
- 2011–14 NASA Einstein Postdoctoral Fellowship
- 2003–09 UIUC Excellent Teachers List (10/10 eligible terms)
- 2005–08 UIUC Outstanding Teachers List (top 10% campus-wide; 4/10 eligible terms)
- 2003–04 Graduate Assistance in Areas of National Need (GAANN) Fellowship (held at UIUC)
- 2003 UVa Department of Music Brander Wyatt Morrison Prize
- 2002–03 UVa Lawn Resident (one of the top honors awarded by UVa)
- 2001–02 David A. Harrison III Undergraduate Research Fellowship (held at UVa)
- 2000–03 UVa Echols Honors Program

Selected talks

Recent invited seminars and colloquia: Centre de Recherche Astrophysique de Lyon (6/22), Institut de Planétologie et d’Astrophysics de Grenoble (6/22), Rudolf Peierls Centre for Theoretical Physics in Oxford (5/22), Nordita (5/22), Observatoire de la Côte d’Azur in Nice (4/22), Univ. Crete (5/21), UCLA/UCSD/UCI (3/21), J. Plasma Physics (3/21), UIUC (1/21), PPPL (11/20), Queen Mary Univ. London (10/20), Instituto Superior Técnico in Portugal (1/20), Univ. Arizona (11/19)...

Recent invited talks: MHD flows in young circumstellar disks, Ringberg (10/23); Cosmic turbulence and magnetic fields, Cargèse (9/23); Astronom, Pasadena (6/23); SolarWind16, Pacific Grove (6/23); Working across scales in complex systems, Emory (4/23); Improving black hole accretion models with plasma theory, Princeton (2/23); Turbulent dissipation in space plasmas, UK Royal Society (5/22); Midwest magnetic fields meeting (6/21); New directions in plasma astrophysics, IPP–Garching (11/19); APS-DPP meeting, Ft. Lauderdale (10/19); Multiscale phenomena in plasma astrophysics, KITP (9/19); Vlasovia, Strasbourg (7/19); Waves Côte d’Azur, Nice (6/19)...

Thesis students and postdoctoral researchers advised

- M. Walker, Princeton astronomy undergraduate (senior thesis 2019–20 → *grad, JHU astro*)
 J. Ding, Princeton astronomy undergraduate (senior thesis 2023–, with C. Hamilton)
- Rui Xu, Princeton astronomy graduate (masters thesis 2015–16)
 Lev Arzamasskiy, Princeton astronomy graduate (masters thesis 2016–17)
 Andrew Alt, Princeton plasma physics graduate (masters thesis 2018–19)
 Alisa Galishnikova, Princeton astronomy graduate (masters thesis 2019–21)
 Himawan Winarto, Princeton plasma physics graduate (masters thesis 2020–21)
 Stephen Majeski, Princeton plasma physics graduate (masters thesis 2021–22)
 Thomas Foster, Princeton plasma physics graduate (masters thesis 2022–23)
- D. St-Onge, Princeton plasma physics graduate (PhD 2016–19 → *Postdoc, Oxford* → *Vola Dynamics*)
 L. Arzamasskiy, Princeton astronomy graduate (PhD 2017–20 → *Member, IAS* → *Citadel*)
 W. Xu, Princeton astronomy graduate (PhD 2019–22 → *Research Fellow, Flatiron*)
 E. Yerger, Princeton plasma physics graduate (PhD 2019–23 → *Postdoc, UNH*)
 C. Bambic, Princeton astronomy graduate (PhD 2021–, with E. Quataert)
 H. Winarto, Princeton plasma physics graduate (PhD 2021–)
 S. Majeski, Princeton plasma physics graduate (PhD 2022–)
 M. Zhang, Princeton plasma physics graduate (PhD 2022–)
 T. Foster, Princeton plasma physics graduate (PhD 2023–, with F. Parra)
- S. S. Cerri, Princeton postdoctoral research associate (2017–21 → *CNRS Researcher, Nice*)
 V. Zhdankin, NASA Einstein Postdoctoral Fellow (2018–21 → *Asst. Prof. Physics, UW-Madison*)
 A. Bott, Princeton postdoctoral research associate (2019–22 → *UKRI FLF, Oxford*)
 M. Zhou, Princeton Presidential Postdoctoral Research Fellow (2022–23 → *Member, IAS*)
 D. Hosking, Princeton Center for Theoretical Science Fellow (2022–25)
 P. Kempster, Lyman Spitzer, Jr. Postdoctoral Fellow (2022–25)

Teaching experience

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| Fall 2016, '18, '20... | Professor, AST521: Intro. to Plasma Astrophysics, Princeton |
| Spring 2017–21, '23 | Professor, AST554: Irreversible Processes in Plasmas, Princeton |
| Fall 2018, '20, '22... | Professor, AST303: Deciphering the Universe, Princeton |
| Jun 2019, '21, '23 | Lecturer, GPAP Summer School on Plasma Physics for Astrophysicists |
| Jul 2018 | Lecturer, Astrosoma Summer School, MIPT, Moscow |
| Fall 2016 | Professor, AST541: Seminar in Theoretical Astrophysics, Princeton |
| Jul 2016 | Lecturer, PiTP: Computational Plasma Astrophysics, Inst. for Adv. Study |
| Jun 2016–2019, '22 | Lecturer, SULI Summer School, Princeton Plasma Physics Laboratory |
| May 2016, '17, '19 | Lecturer, Les Houches Winter School on Plasma Astrophysics |
| Feb 2013 | Lecturer, The Future of Plasma Astrophysics Winter School, Les Houches |
| Fall 2010 – Spr 2011 | College Tutor (Electromagnetism), Mansfield and Merton Colleges, Oxford |
| Fall 2007 – Spr 2009 | Teaching Assistant (Graduate Electromagnetism), Dept. of Physics, UIUC |
| Fall 2006 | Teaching Assistant (General Physics I, Lab), Dept. of Physics, UIUC |
| Spr 2006, '07 | Head Teaching Assistant (General Physics II), Dept. of Physics, UIUC |
| Fall 2005, '08 | Teaching Assistant (General Physics II), Dept. of Physics, UIUC |
| Fall 2004 | Teaching Assistant (Graduate Astrophysics), Dept. of Physics, UIUC |
| Fall 2003, Spr 2005 | Teaching Assistant (Mechanics), Dept. of Physics, UIUC |

Awarded grants

- NASA Heliophysics Theory, Modeling and Simulations, *Tracing the Flow of Energy that Heats and Accelerates Solar-Wind Streams that Originate in Coronal Holes* (PI: B. Chandran, Co-I: MWK; 2023–26)
- Chandra X-Ray Center subaward, *How do Cosmic Plasmas Work? Insights from the Hottest Brightest Cold Front and Gas Perturbations in A2319* (PI: I. Zhuravleva, Co-I: MWK; 2022–24)
- NSF Faculty Early Career Development Program (CAREER) Award, *CAREER: Magnetogenesis and Plasma Dynamo Across Cosmic Time* (PI: MWK; 2020–25)
- NSF/DOE Partnership in Basic Plasma Science and Engineering, *Collaborative Research: Multi-scale Dynamics of Kinetic Turbulence in Weakly Collisional, High-Beta Plasmas* (PIs: MWK, E. Quataert; 2018–21)
- Chandra X-Ray Center subaward, *Shock structure, the electron-ion equilibration timescale and the disintegrating cool core in A2146* (PI: H. Russell, Co-I: MWK; 2018–21)
- NASA Astrophysics Theory Program, *Instability, Turbulence, and Enhanced Transport in Collisionless Black-Hole Accretion Flows* (PI: MWK; 2017–21)
- DOE Laboratory Basic Plasma Science Program, *Turbulent Dynamo and Magnetic Self-Organization in Collisionless, Magnetized Plasmas* (PI: MWK; 2017–21)
- Alfred P. Sloan Research Fellowship in Physics (PI: MWK; 2017–20)
- NSF Astronomy Division, *Collaborative Research: Predicting the Observational Signatures of Accreting Black Holes* (PIs: C. Gammie, E. Quataert, J. Stone, MWK; 2017–20)
- NASA Heliophysics Supporting Research, *Kinetic Turbulence, Ion Heating, and Plasma Microphysics in the Solar Wind and Numerical Simulations* (PI: MWK; 2016–20)

Service (selected)

- Vice-Chair (2019–20), Chair-Elect (2020–21), Chair (2021–22), and Past-Chair (2022–23) of the Topical Group in Plasma Astrophysics (GPAP) of the APS – Division of Plasma Physics
- Member of graduate admissions committee for astronomy (2015–) and plasma (2016–) at Princeton; Examiner for Princeton Ph.D. Generals in plasma and astronomy (2016–21, 23–); Ph.D. Thesis Examiner and/or Reader for 7 astrophysics PhDs and 12 plasma-physics PhDs
- Co-organizer of: *Interconnections between the Physics of Plasmas and Self-Gravitating Systems* at KITP, Santa Barbara (2024); *Plasma Kinetics Working Group Meeting* at WPI, Vienna (2014–19, '22–); *NSF/GPAP Summer School on Plasma Physics for Astrophysicists* at Swarthmore College (2019, 2021, 2023); *Stability, Energetics, and Turbulent Transport in Astrophysical, Fusion, and Solar Plasmas* at PCTS, Princeton (2013)
- Member of organizing committees for: *NSF ECLIPSE* conference (2022); *Connecting Micro and Macro Scales: Acceleration, Reconnection, and Dissipation in Astrophysical Plasmas* conference at KITP (2019); *Snowcluster 2018: The Physics of Galaxy Clusters* conference (2018); *From Laboratories to Astrophysics: The Expanding University of Plasma Physics* winter school at Les Houches (2017); *HEDLA XI* conference at SLAC (2016)
- Reviewer for: NASA Astrophysics Theory Program; NASA Heliophysics Supporting Research Program; NASA Graduate Student Research Program; Chandra X-Ray Observatory Science Program; NSF/DOE Partnership in Basic Plasma Science and Engineering Program
- Referee for: *J. Plasma Physics*, *Astrophys. J.*, *Mon. Not. Roy. Astron. Soc.*, *Proc. Nat. Acad. Sci.*, *Phys. Plasmas*, *Phys. Rev. X*, *J. Fluid Mech.*, *Astron. Astrophys.*, *Comp. Phys. Comm.*

Scientific journal publications

(* denotes a student collaborator under my direct supervision or co-supervision)

1. C. J. Bambic*, E. Quataert, **M. W. Kunz**, Y. Zhang, 2023, submitted
Local models of two-temperature accretion disc coronae. II. Ion thermal conduction and the absence of disc evaporation
2. E. A. Tolman, **M. W. Kunz**, J. M. Stone, L. Arzamasskiy, 2023, submitted
Tearing-mediated reconnection in magnetohydrodynamic poorly ionized plasmas. I. Onset and linear evolution
3. P. Reichherzer, A. F. A. Bott, R. J. Ewart, G. Gregori, P. Kempfski, **M. W. Kunz**, A. A. Schekochihin, 2023, submitted
Efficient micromirror confinement of sub-TeV cosmic rays in galaxy clusters
4. S. Majeski*, **M. W. Kunz**, *J. Plasma Phys.*, in press
On hydrodynamic wave interactions in collisionless, high- β plasmas
5. R. A. Chirakkara, A. Seta, C. Federrath, **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, in press
Critical magnetic Reynolds number of the turbulent dynamo in collisionless plasmas
6. M. Zhou, V. Zhdankin, **M. W. Kunz**, N. F. Loureiro, D. A. Uzdensky, *Astrophys. J.*, 60, 12 (2024; 13 pp.)
Magnetogenesis in a collisionless plasma: from Weibel instability to turbulent dynamo
7. C. J. Bambic*, E. Quataert, **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, 527, 2895 (2024; 24 pp.)
Local models of two-temperature accretion disc coronae. I. Structure, outflows, and energetics
8. J. Squire, R. Meyrand, **M. W. Kunz**, *Astrophys. J. Lett.*, 957, L30 (2023; 7 pp.)
Electron-ion heating partition in imbalanced turbulence
9. K. G. Klein, H. Spence, ..., **M. W. Kunz**, ..., *Space Sci. Rev.*, 219, 74 (2023; 44 pp.)
HelioSwarm: a multipoint, multiscale mission to characterize turbulence
10. P. Kempfski, D. Fielding, E. Quataert, A. K. Galishnikova, **M. W. Kunz**, A. A. Philippov, B. Ripperda, *Mon. Not. R. Astron. Soc.*, 525, 4985 (2023; 14 pp.)
Cosmic ray transport in large-amplitude turbulence with small-scale field reversals
11. J. Squire, **M. W. Kunz**, L. Arzamasskiy, Z. Johnston, E. Quataert, A. A. Schekochihin, *J. Plasma Phys.*, 89, 905890417 (2023; 61 pp.)
Pressure anisotropy and viscous heating in weakly collisional plasma turbulence
12. S. Majeski*, **M. W. Kunz**, J. Squire, *J. Plasma Phys.*, 89, 905890303 (2023; 44 pp.)
Microphysically modified magnetosonic modes in collisionless, high- β plasmas
13. V. Zhdankin, **M. W. Kunz**, D. A. Uzdensky, *Astrophys. J.*, 944, 24 (2023; 13 pp.)
Synchrotron firehose instability
14. L. Arzamasskiy*, **M. W. Kunz**, J. Squire, E. Quataert, A. A. Schekochihin, *Phys. Rev. X*, 13, 021014 (2023; 34 pp.)
Kinetic turbulence in collisionless high- β plasmas

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15. S. S. Cerri, T. Passot, D. Laveder, P.-L. Sulem, **M. W. Kunz**, *Astrophys. J.*, 939, 36 (2022; 13 pp.)
Turbulent regimes in collisions of 3D Alfvén-wave packets
16. A. K. Galishnikova*, **M. W. Kunz**, A. A. Schekochihin, *Phys. Rev. X*, 12, 041027 (2022; 16 pp.)
Tearing instability and current-sheet disruption in the turbulent dynamo
17. M. W. Kunz, T. W. Jones, I. Zhuravleva, in Section “Galaxy Clusters” (eds E. Pointecouteau, E. Rasia, A. Simionescu) of the *Handbook of X-ray and Gamma-ray Astrophysics* (eds C. Bambi, A. Santangelo) (2022; 42 pp.)
Plasma physics of the intracluster medium
18. A. F. A. Bott, L. Chen, P. Tzeferacos, C. A. J. Palmer, . . . , **M. W. Kunz**, . . . , A. A. Schekochihin, D. Q. Lamb, G. Gregori, *Matter Radiat. at Extremes*, 7, 046901 (2022; 15 pp.)
Insensitivity of a turbulent laser-plasma dynamo to initial conditions
19. H. R. Russell, P. E. J. Nulsen, D. Caprioli, U. Chadayammuri, A. C. Fabian, **M. W. Kunz**, B. R. McNamara, J. S. Sanders, A. Richard-Laferrrière, M. Beleznyay, R. E. A. Canning, J. Hlavacek-Larrondo, L. J. King, *Mon. Not. Roy. Astron. Soc.*, 514, 1477 (2022; 17 pp.)
The structure of cluster merger shocks: turbulent width and the electron heating timescale
20. M. Zhou, V. Zhdankin, **M. W. Kunz**, N. F. Loureiro, D. A. Uzdensky, *Proc. Nat. Acad. Sci.*, 119, 2119831119 (2022; 10 pp.)
Spontaneous magnetization of collisionless plasma
21. H. Winarto*, **M. W. Kunz**, *J. Plasma Phys.*, 88, 905880210 (2022; 25 pp.)
Triggering tearing in a forming current sheet with the mirror instability
22. J. Squire, R. Meyrand, **M. W. Kunz**, L. Arzamasskiy, A. A. Schekochihin, E. Quataert, *Nat. Astron.*, 6, 715 (2022; 9 pp.)
High-frequency heating of the solar wind triggered by low-frequency turbulence
23. H. N. Latter, **M. W. Kunz**, *Mon. Not. Roy. Astron. Soc.*, 511, 1182 (2022; 19 pp.)
The vertical shear instability in poorly ionized, magnetized protoplanetary discs
24. A. F. A. Bott, L. Arzamasskiy, **M. W. Kunz**, E. Quataert, J. Squire, *Astrophys. J. Lett.* **922**, L35 (2021; 9 pp.)
Adaptive critical balance and firehose instability in an expanding, turbulent, collisionless plasma
25. W. Xu*, **M. W. Kunz**, *Mon. Not. Roy. Astron. Soc.* **508**, 2142 (2021; 27 pp.)
Formation and evolution of protostellar accretion discs. II. From 3D simulation to a simple semi-analytic model of Class 0/I discs
26. S. S. Cerri, L. Arzamasskiy*, **M. W. Kunz**, *Astrophys. J.* **916**, 120 (2021; 22 pp.)
On stochastic heating and its phase-space signatures in low-beta kinetic turbulence
27. A. Riols, W. Xu*, G. Lesur, **M. W. Kunz**, H. Latter, *Mon. Not. Roy. Astron. Soc.* **506**, 1407 (2021; 20 pp.)
Gravito-turbulence and dynamo in poorly ionized protostellar discs. I. Zero-net-flux case
28. W. Xu*, **M. W. Kunz**, *Mon. Not. Roy. Astron. Soc.* **502**, 4911 (2021; 19 pp.)
Formation and evolution of protostellar accretion discs. I. Angular-momentum budget, gravitational self-regulation, and numerical convergence

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29. A. F. A. Bott, P. Tzeferacos, L. Chen, C. A. J. Palmer, A. Rigby, ..., **M. W. Kunz**, ..., A. A. Schekochihin, D. Q. Lamb, G. Gregori, *Proc. Nat. Acad. Soc.* **118**, e2015729118 (2021; 12 pp.)
Time-resolved fast turbulent dynamo in a laser plasma
30. V. Zhdankin, D. A. Uzdensky, **M. W. Kunz**, *Astrophys. J.* **908**, 71 (2021; 6 pp.)
Production and persistence of extreme two-temperature plasmas in radiative relativistic turbulence
31. **M. W. Kunz**, J. Squire, A. A. Schekochihin, E. Quataert, *J. Plasma Phys.* **86**, 905860603 (2020; 26 pp.)
Self-sustaining sound in high- β , collisionless plasma
32. F. Califano, S. S. Cerri, M. Faganello, D. Laveder, **M. W. Kunz**, *Front. Phys.* **8**, 317 (2020; 12 pp.)
Electron-only magnetic reconnection in plasma turbulence
33. D. A. St-Onge*, **M. W. Kunz**, J. Squire, A. A. Schekochihin, *J. Plasma Phys.* **86**, 905860503 (2020; 64 pp.)
Fluctuation dynamo in a weakly collisional plasma
34. P. Kempfski, E. Quataert, J. Squire, **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, 486, 4013 (2019; 17 pp.)
Shearing-box simulations of MRI-driven turbulence in weakly collisional accretion discs
35. L. Arzamasskiy*, **M. W. Kunz**, B. D. G. Chandran, E. Quataert, *Astrophys. J.*, 879, 53 (2019; 13 pp.)
Hybrid-kinetic simulations of ion heating in Alfvénic turbulence
36. J. Squire, A. A. Schekochihin, E. Quataert, **M. W. Kunz**, *J. Plasma Phys.*, 85, 905850114 (2019; 18 pp.)
Magneto-immutable turbulence in weakly collisional plasmas
37. A. Alt*, **M. W. Kunz**, *J. Plasma Phys. Lett.*, 85, 764850101 (2019; 17 pp.)
Onset of magnetic reconnection in a collisionless, high- β plasma (Featured Article)
38. D. A. St-Onge*, **M. W. Kunz**, *Astrophys. J. Lett.*, 863, L25 (2018; 7 pp.)
Fluctuation dynamo in a collisionless, weakly magnetized plasma
39. **M. W. Kunz**, I. G. Abel, K. G. Klein, A. A. Schekochihin, *J. Plasma Phys.*, 84, 715840201 (2018; 61 pp.)
Astrophysical gyrokinetics: turbulence in pressure-anisotropic plasmas at ion scales and beyond
40. S. S. Cerri, **M. W. Kunz**, F. Califano, *Astrophys. J. Lett.*, 856, L13 (2018; 6 pp.)
Dual phase-space cascades in 3D hybrid-Vlasov–Maxwell turbulence
41. J. Squire, E. Quataert, **M. W. Kunz**, *J. Plasma Phys.*, 83, 905830613 (2017; 44 pp.)
Pressure-anisotropy-induced nonlinearities in the kinetic magnetorotational instability
42. J. Squire, **M. W. Kunz**, E. Quataert, A. A. Schekochihin, *Phys. Rev. Lett.*, 119, 5101 (2017; 6 pp.)
Kinetic simulations of the interruption of large-amplitude shear-Alfvén waves in a high- β plasma

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43. **M. W. Kunz**, J. M. Stone, E. Quataert, *Phys. Rev. Lett.*, 117, 235101 (2016; 6 pp.)
Magnetorotational turbulence and dynamo in a collisionless plasma (Editors' Suggestion)
44. R. Xu*, **M. W. Kunz**, *J. Plasma Phys.*, 82, 905820507 (2016; 54 pp.)
Linear Vlasov theory of a magnetised, thermally stratified atmosphere (Featured Article)
45. S. V. Komarov, E. M. Churazov, **M. W. Kunz**, A. A. Schekochihin, *Mon. Not. R. Astron. Soc.*, 460, 467 (2016; 10 pp.)
Thermal conduction in a mirror-unstable plasma
46. S. Melville, A. A. Schekochihin, **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, 459, 2701 (2016; 19 pp.)
Pressure-anisotropy-driven microturbulence and magnetic-field evolution in a shearing, collisionless plasma
47. C. H. K. Chen, L. Matteini, A. A. Schekochihin, M. L. Stevens, C. S. Salem, B. A. Maruca, **M. W. Kunz**, S. D. Bale, *Astrophys. J. Lett.*, 825, 26 (2016; 5 pp.)
Multi-species measurements of the firehose and mirror instability thresholds in the solar wind
48. J. B. Simon, G. Lesur, **M. W. Kunz**, P. J. Armitage, *Mon. Not. R. Astron. Soc.*, 454, 1117 (2015; 14 pp.)
Magnetically driven accretion in protoplanetary discs
49. **M. W. Kunz**, A. A. Schekochihin, C. H. K. Chen, I. G. Abel, S. C. Cowley, *J. Plasma Phys.*, 81, 325810501 (2015; 61 pp.)
Inertial-range kinetic turbulence in pressure-anisotropic astrophysical plasmas
50. J. A. ZuHone, **M. W. Kunz**, M. Markevitch, J. M. Stone, V. Biffi, *Astrophys. J.*, 798, 90 (2014; 20 pp.)
The effect of anisotropic viscosity of cold fronts in galaxy clusters
51. G. Lesur, **M. W. Kunz**, S. Fromang, *Astron. Astrophys.*, 556, 56 (2014; 17 pp.)
Thanatology in protoplanetary discs: the combined influence of Ohmic, Hall, and ambipolar diffusion on dead zones
52. **M. W. Kunz**, A. A. Schekochihin, J. M. Stone, *Phys. Rev. Lett.*, 112, 205003 (2014; 5 pp.)
Firehose and mirror instabilities in a collisionless shearing plasma (Cover Article)
53. **M. W. Kunz**, J. M. Stone, X.-N. Bai, *J. Comput. Phys.*, 259, 154 (2013; 21 pp.)
Pegasus: a new hybrid-kinetic particle-in-cell code for astrophysical plasma dynamics
54. **M. W. Kunz**, G. Lesur, *Mon. Not. R. Astron. Soc.*, 434, 2295 (2013; 18 pp.)
Magnetic self-organization in Hall-dominated magnetorotational turbulence
55. H. N. Latter, **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, 423, 1964 (2012; 8 pp.)
The HBI in a quasi-global model of the intracluster medium
56. **M. W. Kunz**, T. Bogdanović, C. S. Reynolds, J. M. Stone, *Astrophys. J.*, 754, 122 (2012; 20 pp.)
Buoyancy instabilities in a weakly collisional intracluster medium

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57. W. B. Dapp, S. Basu, **M. W. Kunz**, *Astron. Astrophys.*, 541, 35 (2012; 18 pp.)
Bridging the gap: disk formation in the Class 0 phase with ambipolar diffusion and Ohmic dissipation
58. **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, 417, 602 (2011; 14 pp.)
Dynamical stability of a thermally stratified intracluster medium with anisotropic momentum and heat transport
59. **M. W. Kunz**, A. A. Schekochihin, S. C. Cowley, J. J. Binney, J. S. Sanders, *Mon. Not. R. Astron. Soc.*, 410, 2446 (2011; 11 pp.)
A thermally stable heating mechanism for the intracluster medium: turbulence, magnetic fields and plasma instabilities
60. Matthews L. D., Greenhill L. J. Goddi C., Chandler C. J., Humphreys E. M. L., **M. W. Kunz**, *Astrophys. J.*, 708, 80 (2010; 12 pp.)
A feature movie of SiO emission 20–100 au from the massive young stellar object Orion Source I
61. **M. W. Kunz**, T. Ch. Mouschovias, *Mon. Not. R. Astron. Soc.*, 408, 322 (2010; 19 pp.)
The nonisothermal stage of magnetic star formation. II. Results
62. **M. W. Kunz**, T. Ch. Mouschovias, *Mon. Not. R. Astron. Soc.*, 399, L94 (2009; 4 pp.)
The initial core mass function due to ambipolar diffusion in molecular clouds
63. T. Ch. Mouschovias, **M. W. Kunz**, D. A. Christie, *Mon. Not. R. Astron. Soc.*, 397, 14 (2009; 9 pp.)
Formation of interstellar clouds: Parker instability with phase transitions
64. **M. W. Kunz**, T. Ch. Mouschovias, *Astrophys. J.*, 693, 1895 (2009; 16 pp.)
The nonisothermal stage of magnetic star formation. I. Formulation of the problem and method of solution
65. **M. W. Kunz**, *Mon. Not. R. Astron. Soc.*, 385, 1494 (2008; 16 pp.)
On the linear stability of weakly ionized, magnetized planar shear flows
66. T. Ch. Mouschovias, K. Tassis, **M. W. Kunz**, *Astrophys. J.*, 646, 1043 (2006; 6 pp.)
Observational constraints on the ages of molecular clouds and the star-formation timescale: ambipolar-diffusion-controlled or turbulence-induced star formation?
67. **M. W. Kunz**, S. A. Balbus, *Mon. Not. R. Astron. Soc.*, 348, 355 (2004; 5 pp.)
Ambipolar diffusion in the magnetorotational instability