

Complete list of publications for Prateek Sharma (March 2021)

A) Publications with peer review process:

1. R. Mohapatra, C. Federrath, **P. Sharma**, “Turbulent density and pressure fluctuations in the stratified intracluster medium,” [Monthly Notices of Royal Astronomical Society](#), 500, 5072 (2021)
2. H. K. Das, P. P. Choudhury, **P. Sharma**, “Shatter or not: role of temperature and metallicity in the evolution of thermal instability,” [Monthly Notices of Royal Astronomical Society](#), 502, 4935 (2021)
3. V. Kanjilal, A. Dutta, **P. Sharma**, “Growth and structure of multiphase gas in the cloud-crushing problem with cooling,” [Monthly Notices of Royal Astronomical Society](#), 501, 1143 (2021)
4. S. Gupta, **P. Sharma**, A. Mignone, “A numerical approach to the non-uniqueness problem of cosmic ray two-fluid equations at shocks,” [Monthly Notices of Royal Astronomical Society](#), 502, 2733 (2021)
5. D. Nelson, **P. Sharma**, A. Pillepich, V. Springel, R. Pakmor, R. Weinberger, M. Vogelsberger, F. Marinacci, L. Hernquist, “Resolving small-scale cold circumgalactic gas in TNG50,” [Monthly Notices of Royal Astronomical Society](#), 498, 2391 (2020)
6. R. Mohapatra, C. Federrath, **P. Sharma**, “Turbulence in stratified atmospheres: implications for the intracluster medium,” [Monthly Notices of Royal Astronomical Society](#), 493, 5838 (2020)
7. P. Dhang, A. Bendre, **P. Sharma**, K. Subramanian, “Characterising the dynamo in a radiatively inefficient accretion flow,” [Monthly Notices of Royal Astronomical Society](#), 494, 4854 (2020)
8. S. Gupta, B.B. Nath, **P. Sharma**, D. Eichler, “Realistic modeling of wind and supernovae shocks in star clusters: addressing $^{22}\text{Ne}/^{20}\text{Ne}$ and other problems in Galactic cosmic rays,” [Monthly Notices of Royal Astronomical Society](#), 493, 3159 (2020)
9. D. Prasad, **P. Sharma**, A. Babul, G. M. Voit, B. W. O’Shea, “Cool-Core Cycles and Phoenix,” [Monthly Notices of Royal Astronomical Society](#), 495, 594 (2020)
10. A. Vijayan, B. B. Nath, **P. Sharma**, Y. Shchekinov, “Radio halos of star forming galaxies,” [Monthly Notices of Royal Astronomical Society](#), 492, 2924 (2020)
11. P. P. Choudhury, **P. Sharma**, E. Quataert, “Multiphase gas in the circumgalactic medium: relative role of $t_{\text{cool}}/t_{\text{ff}}$ and density fluctuations,” [Monthly Notices of Royal Astronomical Society](#), 488, 3195 (2019)

12. P. P. Choudhury, G. Kauffmann, **P. Sharma**, “A 1-dimensional hydrodynamic model for the cooling and heating of gas in dark matter halos from $z=6$ to $z=0$,” [Monthly Notices of Royal Astronomical Society](#), 485, 3430 (2019)
13. R. Mohapatra, **P. Sharma**, “Turbulence in the intracluster medium: simulations, observables, and thermodynamics,” [Monthly Notices of Royal Astronomical Society](#), 484, 4881 (2019)
14. P. Dhang, **P. Sharma**, “3D global simulations of RIAFs: convergence, effects of azimuthal extent and dynamo,” [Monthly Notices of Royal Astronomical Society](#), 482, 848 (2019)
15. **P. Sharma**, “Astrophysical radio background cannot explain the EDGES 21-cm signal: constraints from cooling of non-thermal electrons,” [Monthly Notices of Royal Astronomical Society \(Letters\)](#), 481L, 6 (2018)
16. D. Prasad, **P. Sharma**, A. Babul, “Cool-Core Clusters : Role of BCG, Star Formation, and AGN-Driven Turbulence,” [Astrophysical Journal](#), 863, 62 (2018)
17. S. Gupta, B. B. Nath, **P. Sharma**, “Constraining cosmic ray acceleration in young star clusters using multi-wavelength observations,” [Monthly Notices of Royal Astronomical Society](#), 479, 5220 (2018)
18. P. Dhang, **P. Sharma**, B. Mukhopadhyay, “Magnetized SASI: its mechanism and an explanation for some QPOs in XRBs,” [Monthly Notices of Royal Astronomical Society](#), 476, 3310 (2018)
19. A. Vijayan, K. C. Sarkar, B. B. Nath, **P. Sharma**, Y. Shchekinov, “Extra-planar X-ray emission from disc-wide outflows in spiral galaxies,” [Monthly Notices of Royal Astronomical Society](#), 475, 5513 (2018)
20. S. Gupta, B. B. Nath, **P. Sharma**, D. Eichler, “Lack of thermal energy in superbubbles: hint of cosmic rays?” [Monthly Notices of Royal Astronomical Society](#), 473, 1537 (2018)
21. A. Iqbal, R. Kale, S. Majumdar, B. B. Nath, M. Pandge, **P. Sharma**, M. A. Malik, S. Raychaudhury, “Active Galactic Nucleus Feedback with the Square Kilometre Array and Implications for Cluster Physics and Cosmology ,” [Journal of Astrophysics and Astronomy](#), 38, 68 (2017)
22. B. Vaidya, D. Prasad, A. Mignone, **P. Sharma**, L. Rickler, “Scalable explicit implementation of anisotropic diffusion with Runge-Kutta-Legendre super-time stepping,” [Monthly Notices of Royal Astronomical Society](#), 472, 3147 (2017)
23. D. Prasad, **P. Sharma**, A. Babul, “AGN jet-driven stochastic cold accretion in cluster cores,” [Monthly Notices of Royal Astronomical Society](#), 471, 1531 (2017)

24. K. C. Sarkar, B. B. Nath, **P. Sharma**, “Clues to the origin of Fermi Bubbles from OVIII/OVII line ratio,” [Monthly Notices of Royal Astronomical Society](#), 467, 3544 (2017)
25. N. Yadav, D. Mukherjee, **P. Sharma**, B. B. Nath, “How multiple supernovae overlap to form superbubbles,” [Monthly Notices of Royal Astronomical Society](#), 465, 1720 (2017)
26. R. Kale, K. S. Dwarakanath, D. V. Lal, J. Bagchi, S. Paul, S. Malu, A. Datta, V. Parekh, **P. Sharma**, M. Pandey-Pommier, “Clusters of Galaxies and the Cosmic Web with Square Kilometre Array,” [Journal of Astrophysics and Astronomy](#), 37, 31 (2016)
27. A. Roy, B. B. Nath, **P. Sharma**, Y. Shchekinov, “Molecular outflows in starburst nuclei,” [Monthly Notices of Royal Astronomical Society](#), 463, 2296 (2016)
28. S. Gupta, B. B. Nath, **P. Sharma**, Y. Shchekinov, “How radiation affects superbubbles: through momentum injection in early phase and photo-heating thereafter,” [Monthly Notices of Royal Astronomical Society](#), 462, 4532 (2016)
29. P. Dhang, **P. Sharma**, B. Mukhopadhyay, “Spherical accretion: the influence of inner boundary and quasi-periodic oscillations,” [Monthly Notices of Royal Astronomical Society](#), 461, 2426 (2016)
30. K. Lakhchaura, T. D. Saini, **P. Sharma**, “Decoding X-ray observations from centres of galaxy clusters using MCMC,” [Monthly Notices of Royal Astronomical Society](#), 460, 2625 (2016)
31. K. C. Sarkar, B. B. Nath, **P. Sharma**, Y. Shchekinov, “Diffuse X-Ray Emission from Star-forming Galaxies,” [Astrophysical Journal Letters](#), 818, 24 (2016)
32. P. P. Choudhury, **P. Sharma**, “Cold gas in cluster cores: global stability analysis and non-linear simulations of thermal instability,” [Monthly Notices of Royal Astronomical Society](#), 457, 2554 (2016)
33. K. C. Sarkar, B. B. Nath, **P. Sharma**, “Multiwavelength features of Fermi bubbles as signatures of a Galactic wind,” [Monthly Notices of Royal Astronomical Society](#), 453, 3827 (2015)
34. D. Prasad, **P. Sharma**, A. Babul, “Cool Core Cycles: Cold Gas and AGN Jet Feedback in Cluster Cores,” [Astrophysical Journal](#), 811, 108 (2015)
35. A. Roy, B. B. Nath, P. Sharma, “Narrow escape: how ionizing photons escape from disc galaxies,” [Monthly Notices of Royal Astronomical Society](#), 451, 1939 (2015)
36. K. C. Sarkar, B. B. Nath, **P. Sharma**, Y. Shchekinov, “Long way to go: how outflows from large galaxies propagate through the hot halo gas,” [Monthly Notices of Royal Astronomical Society](#), 448, 328 (2015)
37. A. Singh, **P. Sharma**, “The cold mode: a phenomenological model for the evolution of density perturbations in the intracluster medium,” [Monthly Notices of Royal Astronomical Society](#), 446, 1895 (2015)

38. **P. Sharma**, A. Roy, B. B. Nath, Y. Shchekinov, “In a Hot Bubble: Why Does Superbubble Feedback Work, but Isolated Supernovae Do Not?,” [Monthly Notices of Royal Astronomical Society](#), 443, 3463 (2014)
39. N. Banerjee, **P. Sharma**, “Turbulence and Cooling in Galaxy Cluster Cores,” [Monthly Notices of Royal Astronomical Society](#), 443, 687 (2014)
40. B. Wagh, **P. Sharma**, M. McCourt, “Thermal Conduction and Multiphase Gas in Cluster Cores,” [Monthly Notices of Royal Astronomical Society](#), 439, 2822 (2014)
41. U. Das, **P. Sharma**, “Radiatively Inefficient Accretion Flow Simulations with Cooling: Implications for Black Hole Transients,” [Monthly Notices of Royal Astronomical Society](#), 435, 2431 (2013)
42. A. Roy, B. B. Nath, **P. Sharma**, Y. Shchekinov, “Superbubble Breakout and Galactic Winds from Disk Galaxies,” [Monthly Notices of Royal Astronomical Society](#), 434, 3572 (2013)
43. A. Babul, **P. Sharma**, C. S. Reynolds, “Isotropic Heating of Galaxy Cluster Cores via Rapidly Reorienting AGN Jets,” [Astrophysical Journal](#), 768, 11 (2013)
44. **P. Sharma**, M. McCourt, I. J. Parrish, E. Quataert, “On the Structure of Hot Gas in Halos: Implications for the Lx-Tx Relation & Missing Baryons,” [Monthly Notices of Royal Astronomical Society](#), 427, 1219 (2012)
45. M. A. Riquelme, E. Quataert, **P. Sharma**, A. Spitkovsky, “Local Two-dimensional Particle-in-cell Simulations of the Collisionless MRI,” [Astrophysical Journal](#), 755, 50 (2012)
46. I. J. Parrish, M. McCourt, E. Quataert, **P. Sharma**, “The Effects of Anisotropic Viscosity on Turbulence and Heat Transport in the Intracluster Medium,” [Monthly Notices of Royal Astronomical Society](#), 422, 704 (2012)
47. **P. Sharma**, M. McCourt, E. Quataert, I. J. Parrish, “Thermal Instability and the Feedback Regulation of Hot Haloes in Clusters, Groups and Galaxies,” [Monthly Notices of Royal Astronomical Society](#), 420, 3174 (2012)
48. M. McCourt, **P. Sharma**, E. Quataert, I. J. Parrish, “Thermal Instability in Gravitationally Stratified Plasmas: Implications for Multiphase Structure in Clusters and Galaxy Haloes,” [Monthly Notices of Royal Astronomical Society](#), 419, 3319 (2012)
49. M. Gaspari, M. Ruszkowski, **P. Sharma**, “Cause and Effect of Feedback: Multiphase Gas in Cluster Cores Heated by AGN Jets,” [Astrophysical Journal](#), 746, 94 (2012)
50. I. J. Parrish, M. McCourt, E. Quataert, **P. Sharma**, “Turbulent Pressure Support in the Outer Parts of Galaxy Clusters,” [Monthly Notices of Royal Astronomical Society](#), 419, 29 (2012)

51. **P. Sharma**, G. W. Hammett, “A Fast Semi-implicit Method for Anisotropic Diffusion,” [Journal of Computational Physics](#), **230**, 4899 (2011)
52. M. McCourt, I. J. Parrish, **P. Sharma**, E. Quataert, “Can Conduction Induce Convection? On the Nonlinear Saturation of Buoyancy Instabilities in Dilute, Magnetized Plasmas,” *Monthly Notices of Royal Astronomical Society*, **413**, 1295 (2011)
53. K. Dodds-Eden, **P. Sharma**, E. Quataert, R. Genzel, S. Gillessen, F. Eisenhauer, D. Porquet, “Time Dependent Models of Flares from Sagittarius A*,” [Astrophysical Journal](#), **725**, 450 (2010)
54. **P. Sharma**, P. Colella, D. F. Martin, “Numerical Implementation of Streaming Down the Gradient: Application to Fluid Modeling of Cosmic Rays and Saturated Conduction,” [SIAM Journal on Scientific Computing](#), **32**, 3564 (2010)
55. **P. Sharma**, I. J. Parrish, E. Quataert, “Thermal Instability with Anisotropic Thermal Conduction and Adiabatic Cosmic Rays: Implications for Cold Filaments in Galaxy Clusters,” [Astrophysical Journal](#), **720**, 652 (2010)
56. I. J. Parrish, E. Quataert, **P. Sharma**, “Turbulence in Galaxy Cluster Cores: a Key to Cluster Bimodality?,” [Astrophysical Journal](#), **712**, 194 (2010)
57. I. J. Parrish, E. Quataert, **P. Sharma**, “Anisotropic Thermal Conduction and the Cooling Flow Problem in Galaxy Clusters,” [Astrophysical Journal](#), **703**, 96 (2009)
58. **P. Sharma**, B. D. G. Chandran, E. Quataert, I. J. Parrish, “Buoyancy Instabilities in Galaxy Clusters: Convection Due to Adiabatic Cosmic Rays and Anisotropic Thermal Conduction,” [Astrophysical Journal](#), **699**, 348 (2009)
59. **P. Sharma**, E. Quataert, J. M. Stone, “Spherical Accretion with Anisotropic Thermal Conduction,” [Monthly Notices of Royal Astronomical Society](#), **389**, 1815 (2008)
60. **P. Sharma**, E. Quataert, J. M. Stone, “Faraday Rotation in Global Accretion Disk Simulations: Implications for Sgr A*,” [Astrophysical Journal](#), **671**, 1696 (2007)
61. **P. Sharma**, E. Quataert, G. W. Hammett, J. M. Stone, “Electron Heating in Hot Accretion Flows,” [Astrophysical Journal](#), **667**, 714 (2007)
62. **P. Sharma**, G. W. Hammett, “Preserving Monotonicity in Anisotropic Diffusion,” [Journal of Computational Physics](#), **227**, 123 (2007)
63. **P. Sharma**, G. W. Hammett, E. Quataert, J. M. Stone, “Shearing Box Simulations of the MRI in a Collisionless Plasma,” [Astrophysical Journal](#), **637**, 952 (2006)
64. A. A. Schekochihin, S. C. Cowley, R. M. Kulsrud, G. W. Hammett, **P. Sharma**, “Plasma Instabilities and Magnetic Field Growth in Clusters of Galaxies,” [Astrophysical Journal](#), **629**, 139 (2005)
65. **P. Sharma**, G. W. Hammett, E. Quataert, “Transition from Collisionless to Collisional Magnetorotational Instability,” [Astrophysical Journal](#), **596**, 1121 (2003)

C) Publications without peer review process:

1. A. Dutta, **P. Sharma**, “On Modeling CC85 Wind in an Expanding Local Box,” [Research Notes of the American Astronomical Society, Volume 3, Issue 10, article id. 148 \(2019\)](#)
2. U. Das, **P. Sharma**, “Cooling and Black Hole Disk Transitions,” in Recent Trends in the Study of Compact Objects: Theory and Observations. Proceedings of a conference, ed. S. Das, A. Nandi, and I. Chattopadhyay, [Astronomical Society of India Conference Series, Vol. 8, p.27-30 \(2013\)](#)
3. **P. Sharma**, “Astrophysical Coronae: Lessons from Modeling of the Intracluster Medium,” [Bulletin of Astronomical Society of India; proceedings article for an invited talk at the Astronomical Society of India \(ASI\) meeting \(2013\), arXiv:1304.2408](#)
4. B. D. G. Chandran, **P. Sharma**, I. J. Parrish, “Plasma Physics in Clusters of Galaxies,” [Astro2010: The Astronomy and Astrophysics Decadal Survey, Science White Papers, no. 41 \(2010\)](#)
5. I. J. Parrish, E. Quataert, **P. Sharma**, “Beyond MHD in Galaxy Clusters,” in the Proceedings of *The Monster’s Fiery Breath: Feedback in galaxies, groups, and clusters*, Madison, Wisconsin, [AIP Conference Proceedings, Vol. 1201, ed. S. Heinz, E. Wilcots, 363 \(2009\)](#)
6. **P. Sharma**, B. D. G. Chandran, E. Quataert, I. J. Parrish, “Turbulence and Mixing in the Intracluster Medium,” in the Proceedings of *The Monster’s Fiery Breath: Feedback in galaxies, groups, and clusters*, Madison, Wisconsin, [AIP Conference Proceedings, Vol. 1201, ed. S. Heinz, E. Wilcots, 363 \(2009\), arXiv:0909.0270](#)
7. **P. Sharma**, “Kinetic Effects on Turbulence Driven by the Magnetorotational Instability in Black Hole Accretion,” PhD Thesis, Princeton University (2006), [arXiv:astro-ph/0703542](#)
8. A. A. Schekochihin, S. C. Cowley, R. M. Kulsrud, G. W. Hammett, **P. Sharma**, “Magnetised Plasma Turbulence in Clusters of Galaxies,” in the Proceedings of *The Magnetized Plasma in Galaxy Evolution*, Jagiellonian University, Krakow, Poland, ed. K. T. Chyzy, R.-J. Dettmar, K. Otmianowska-Mazur, M. Soida, 86 (2004), [arXiv:astro-ph/0411781](#)
9. **P. Sharma**, G. Hammett, E. Quataert, “Collisional Effects on the Kinetic MRI,” in [AGN Physics with the Sloan Digital Sky Survey, ASP Conference Series, Vol. 311, ed. G. T. Richards, P. B. Hall, 139 \(2004\)](#)
10. **P. Sharma**, G. Shvets, “New Effects in Relativistic Thomson Scattering,” in [Advanced Accelerator Concepts: Tenth Workshop, AIP Conference Proceedings, Vol. 647, ed. C. E. Clayton, P. Muggli, 760 \(2002\)](#)

D) Popular/Review Articles:

1. **P. Sharma**, “Plasma processes at the scales of galaxies and clusters of galaxies,” published in the Science and Culture magazine in the [special issue on Saha’s 125th birth anniversary](#), Ed. A. R. Choudhuri (2018)
2. **P. Sharma**, “ALMA Confirms Dust in Supernova 1987 A,” [Research News in Current Science](#), 106, 307 (2014)