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Merging galaxy clusters: probing magnetism and particle acceleration over cosmic time

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BIBLIOGRAPHY

- Ackermann, M., Ajello, M., Albert, A., et al. 2014, *ApJ*, 787, 18
- Ackermann, M., Ajello, M., Albert, A., et al. 2016, *ApJ*, 819, 149
- Ackermann, M., Ajello, M., Allafort, A., et al. 2010a, *ApJ*, 717, L71
- Ackermann, M., Ajello, M., Allafort, A., et al. 2010b, *ApJ*, 717, L71
- Adam, R., Goksu, H., Brown, S., Rudnick, L., & Ferrari, C. 2021, *A&A*, 648, A60
- Akamatsu, H., Mizuno, M., Ota, N., et al. 2017, *A&A*, 600, A100
- Akamatsu, H., van Weeren, R. J., Ogren, G. A., et al. 2015, *A&A*, 582, A87
- Albert, J. G., Sifón, C., Stroe, A., et al. 2017, *A&A*, 607, A4
- Amodeo, S., Mei, S., Stanford, S. A., et al. 2018, *ApJ*, 853, 36
- Anderson, C. S., Gaensler, B. M., & Feain, I. J. 2016, *ApJ*, 825, 59
- Andrade-Santos, F., Jones, C., Forman, W. R., et al. 2017, *ApJ*, 843, 76
- Andrade-Santos, F., van Weeren, R. J., Di Gennaro, G., et al. 2019, *ApJ*, 887, 31
- Andreon, S. & Huertas-Company, M. 2011, *A&A*, 526, A11

- Arnaud, K. A. 1996, in *Astronomical Society of the Pacific Conference Series*, Vol. 101, *Astronomical Data Analysis Software and Systems V*, ed. G. H. Jacoby & J. Barnes, 17
- Arnaud, M. 2009, *A&A*, 500, 103
- Arnaud, M., Pratt, G. W., Piffaretti, R., et al. 2010, *A&A*, 517, A92
- Bagchi, J., Durret, F., Neto, G. B. L., & Paul, S. 2006, *Science*, 314, 791
- Barrena, R., Streblyanska, A., Ferragamo, A., et al. 2018, *A&A*, 616, A42
- Bartalucci, I., Mazzotta, P., Bourdin, H., & Vikhlinin, A. 2014, *A&A*, 566, A25
- Basu, K., Vazza, F., Erler, J., & Sommer, M. 2016, *A&A*, 591, A142
- Baumgartner, V. & Breitschwerdt, D. 2009, *Astronomische Nachrichten*, 330, 898
- Beresnyak, A. 2012, *Phys. Scr*, 86, 058201
- Beresnyak, A. & Miniati, F. 2016, *ApJ*, 817, 127
- Bicknell, G. V., Cameron, R. A., & Gingold, R. A. 1990, *ApJ*, 357, 373
- Biffi, V., Planelles, S., Borgani, S., et al. 2018, *MNRAS*, 476, 2689
- Blandford, R. & Eichler, D. 1987, *Phys. Rep.*, 154, 1
- Blasi, P. & Colafrancesco, S. 1999, *Astroparticle Physics*, 12, 169
- Bleem, L. E., Bocquet, S., Stalder, B., et al. 2020, *ApJS*, 247, 25
- Blundell, K. M., Rawlings, S., & Willott, C. J. 1999, *AJ*, 117, 677
- Bocquet, S., Dietrich, J. P., Schrabback, T., et al. 2019, *ApJ*, 878, 55
- Bonafede, A., Brüggen, M., van Weeren, R., et al. 2012, *MNRAS*, 426, 40
- Bonafede, A., Cassano, R., Brüggen, M., et al. 2017, *MNRAS*, 470, 3465
- Bonafede, A., Feretti, L., Murgia, M., et al. 2010a, *A&A*, 513, A30
- Bonafede, A., Feretti, L., Murgia, M., et al. 2010b, *arXiv e-prints*, arXiv:1009.1233
- Bonafede, A., Giovannini, G., Feretti, L., Govoni, F., & Murgia, M. 2009, *A&A*, 494, 429
- Bonafede, A., Intema, H. T., Brüggen, M., et al. 2014, *ApJ*, 785, 1
- Bonafede, A., Vazza, F., Brüggen, M., et al. 2013, *MNRAS*, 433, 3208

- Botteon, A., Brunetti, G., van Weeren, R. J., et al. 2020, *ApJ*, 897, 93
- Botteon, A., Gastaldello, F., Brunetti, G., & Dallacasa, D. 2016a, *MNRAS*, 460, L84
- Botteon, A., Gastaldello, F., Brunetti, G., & Dallacasa, D. 2016b, *MNRAS*, 460, L84
- Brentjens, M. A. 2011, *A&A*, 526, A9
- Brentjens, M. A. & de Bruyn, A. G. 2005, *A&A*, 441, 1217
- Briggs, D. S. 1995, in *Bulletin of the American Astronomical Society*, Vol. 27, American Astronomical Society Meeting Abstracts, 1444
- Brown, S. & Rudnick, L. 2011, *MNRAS*, 412, 2
- Brüggen, M., Ruszkowski, M., Simionescu, A., Hoeft, M., & Dalla Vecchia, C. 2005, *ApJ*, 631, L21
- Brüggen, M. & Vazza, F. 2020, *MNRAS*, 493, 2306
- Brunetti, G., Giacintucci, S., Cassano, R., et al. 2008, *Nature*, 455, 944
- Brunetti, G. & Jones, T. W. 2014, *International Journal of Modern Physics D*, 23, 1430007
- Brunetti, G. & Lazarian, A. 2007, *MNRAS*, 378, 245
- Brunetti, G. & Lazarian, A. 2011, *MNRAS*, 410, 127
- Brunetti, G., Setti, G., Feretti, L., & Giovannini, G. 2001, *MNRAS*, 320, 365
- Brunetti, G. & Vazza, F. 2020, *Phys. Rev. Lett.*, 124, 051101
- Brunetti, G., Zimmer, S., & Zandanel, F. 2017, *MNRAS*, 472, 1506
- Burenin, R. A., Bikmaev, I. F., Khamitov, I. M., et al. 2018, *Astronomy Letters*, 44, 297
- Burn, B. J. 1966, *MNRAS*, 133, 67
- Burns, J. O., Skillman, S. W., & O'Shea, B. W. 2010, *ApJ*, 721, 1105
- Caprioli, D. & Spitkovsky, A. 2014, *ApJ*, 783, 91
- Carilli, C. L. & Taylor, G. B. 2002, *ARA&A*, 40, 319
- Cash, W. 1979, *ApJ*, 228, 939
- Cassano, R., Botteon, A., Di Gennaro, G., et al. 2019, *ApJ*, 881, L18

- Cassano, R. & Brunetti, G. 2005, MNRAS, 357, 1313
- Cassano, R., Brunetti, G., Röttgering, H. J. A., & Brüggen, M. 2010a, A&A, 509, A68
- Cassano, R., Brunetti, G., & Setti, G. 2006, MNRAS, 369, 1577
- Cassano, R., Ettori, S., Brunetti, G., et al. 2013, ApJ, 777, 141
- Cassano, R., Ettori, S., Giacintucci, S., et al. 2010b, ApJ, 721, L82
- Cavaliere, A. & Fusco-Femiano, R. 1976, A&A, 49, 137
- Chambers, K. C., Magnier, E. A., Metcalfe, N., et al. 2016, arXiv e-prints, arXiv:1612.05560
- Chandra, P., Ray, A., & Bhatnagar, S. 2004, ApJ, 612, 974
- Cho, J. 2014, ApJ, 797, 133
- Coles, P. & Chiang, L.-Y. 2000, Nature, 406, 376
- Cornwell, T. J., Golap, K., & Bhatnagar, S. 2005, in Astronomical Society of the Pacific Conference Series, Vol. 347, Astronomical Data Analysis Software and Systems XIV, ed. P. Shopbell, M. Britton, & R. Ebert, 86
- Cornwell, T. J., Golap, K., & Bhatnagar, S. 2008, IEEE Journal of Selected Topics in Signal Processing, 2, 647
- Cuciti, V., Brunetti, G., van Weeren, R., et al. 2018, A&A, 609, A61
- Cuciti, V., Cassano, R., Brunetti, G., et al. 2021a, A&A, 647, A51
- Cuciti, V., Cassano, R., Brunetti, G., et al. 2021b, A&A, 647, A50
- Dallacasa, D., Brunetti, G., Giacintucci, S., et al. 2009, ApJ, 699, 1288
- Dawson, W. A., Jee, M. J., Stroe, A., et al. 2015, ApJ, 805, 143
- de Gasperin, F., Dijkema, T. J., Drabent, A., et al. 2019, A&A, 622, A5
- de Gasperin, F., Intema, H. T., Shimwell, T. W., et al. 2017, ArXiv e-prints
- de Gasperin, F., Ogrean, G. A., van Weeren, R. J., et al. 2015, MNRAS, 448, 2197
- de Gasperin, F., van Weeren, R. J., Brüggen, M., et al. 2014, MNRAS, 444, 3130
- Di Gennaro, G., van Weeren, R. J., Andrade-Santos, F., et al. 2019, ApJ, 873, 64

- Di Gennaro, G., van Weeren, R. J., Brunetti, G., et al. 2021a, *Nature Astronomy*, 5, 268
- Di Gennaro, G., van Weeren, R. J., Hoeft, M., et al. 2018, *ApJ*, 865, 24
- Di Gennaro, G., van Weeren, R. J., Rudnick, L., et al. 2021b, *ApJ*, 911, 3
- Dolag, K., Bartelmann, M., & Lesch, H. 1999, *A&A*, 348, 351
- Dolag, K., Grasso, D., Springel, V., & Tkachev, I. 2005, *JCAP*, 2005, 009
- Domínguez-Fernández, P., Vazza, F., Brüggen, M., & Brunetti, G. 2019, *MNRAS*, 486, 623
- Donnert, J., Dolag, K., Brunetti, G., & Cassano, R. 2013, *MNRAS*, 429, 3564
- Donnert, J., Vazza, F., Brüggen, M., & ZuHone, J. 2018, *Space Sci. Rev.*, 214, 122
- Donnert, J. M. F., Beck, A. M., Dolag, K., & Röttgering, H. J. A. 2017, *MNRAS*, 471, 4587
- Donnert, J. M. F., Stroe, A., Brunetti, G., Hoang, D., & Roettgering, H. 2016, *MNRAS*, 462, 2014
- Drury, L. O. 1983, *Reports on Progress in Physics*, 46, 973
- Ebeling, H., Edge, A. C., Mantz, A., et al. 2010, *MNRAS*, 407, 83
- Eckert, D., Molendi, S., & Paltani, S. 2011, *A&A*, 526, A79
- Ensslin, T. A., Biermann, P. L., Klein, U., & Kohle, S. 1998, *A&A*, 332, 395
- Enßlin, T. A. & Brüggen, M. 2002, *MNRAS*, 331, 1011
- Enßlin, T. A. & Gopal-Krishna. 2001, *A&A*, 366, 26
- Fakhouri, O., Ma, C.-P., & Boylan-Kolchin, M. 2010, *MNRAS*, 406, 2267
- Farnsworth, D., Rudnick, L., & Brown, S. 2011, *AJ*, 141, 191
- Feretti, L., Giovannini, G., Govoni, F., & Murgia, M. 2012, *A&A Rev.*, 20, 54
- Finoguenov, A., Sarazin, C. L., Nakazawa, K., Wik, D. R., & Clarke, T. E. 2010, *ApJ*, 715, 1143
- Foreman-Mackey, D. 2016, *The Journal of Open Source Software*, 2016
- Foreman-Mackey, D. 2017, *corner.py: Corner plots*, *Astrophysics Source Code Library*

- Foreman-Mackey, D., Hogg, D. W., Lang, D., & Goodman, J. 2013, *PASP*, 125, 306
- Forman, W., Jones, C., & Tucker, W. 1982, in *Bulletin of the American Astronomical Society*, Vol. 14, 904
- Frick, P., Sokoloff, D., Stepanov, R., & Beck, R. 2011, *MNRAS*, 414, 2540
- Fruscione, A., McDowell, J. C., Allen, G. E., et al. 2006, in *Proc. SPIE*, Vol. 6270, *Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series*, 62701V
- Fujita, Y., Takizawa, M., Yamazaki, R., Akamatsu, H., & Ohno, H. 2015, *ApJ*, 815, 116
- Ghizzardi, S., Rossetti, M., & Molendi, S. 2010, *A&A*, 516, A32
- Giacintucci, S., Markevitch, M., Cassano, R., et al. 2017, *ApJ*, 841, 71
- Giacintucci, S., Venturi, T., Macario, G., et al. 2008, *A&A*, 486, 347
- Giocoli, C., Tormen, G., & Sheth, R. K. 2012, *MNRAS*, 422, 185
- Giovannini, G., Bonafede, A., Feretti, L., et al. 2009, *A&A*, 507, 1257
- Giovannini, G., Cau, M., Bonafede, A., et al. 2020, *A&A*, 640, A108
- Gladders, M. D. & Yee, H. K. C. 2005, *ApJS*, 157, 1
- Goldreich, P. & Sridhar, S. 1997, *ApJ*, 485, 680
- Golovich, N., Dawson, W. A., Wittman, D. M., et al. 2019a, *ApJS*, 240, 39
- Golovich, N., Dawson, W. A., Wittman, D. M., et al. 2019b, *ApJ*, 882, 69
- Golovich, N., van Weeren, R. J., Dawson, W. A., Jee, M. J., & Wittman, D. 2017, *ApJ*, 838, 110
- Govoni, F. & Feretti, L. 2004a, *International Journal of Modern Physics D*, 13, 1549
- Govoni, F. & Feretti, L. 2004b, *International Journal of Modern Physics D*, 13, 1549
- Govoni, F., Murgia, M., Feretti, L., et al. 2006, *A&A*, 460, 425
- Govoni, F., Murgia, M., Xu, H., et al. 2013, *A&A*, 554, A102
- Guo, X., Sironi, L., & Narayan, R. 2014a, *ApJ*, 794, 153
- Guo, X., Sironi, L., & Narayan, R. 2014b, *ApJ*, 797, 47

- Ha, J.-H., Ryu, D., & Kang, H. 2018, *ApJ*, 857, 26
- Hilton, M., Sifón, C., Naess, S., et al. 2021, *ApJS*, 253, 3
- Hitomi Collaboration, Aharonian, F., Akamatsu, H., et al. 2016, *Nature*, 535, 117
- Hitomi Collaboration, Aharonian, F., Akamatsu, H., et al. 2018, *PASJ*, 70, 9
- Hoang, D. N., Shimwell, T. W., Stroe, A., et al. 2017, *MNRAS*, 471, 1107
- Hoang, D. N., Shimwell, T. W., van Weeren, R. J., et al. 2018, *MNRAS*, 478, 2218
- Hoefl, M. & Brüggen, M. 2007, *MNRAS*, 375, 77
- Hong, S. E., Ryu, D., Kang, H., & Cen, R. 2014, *ApJ*, 785, 133
- Huang, N., Bleem, L. E., Stalder, B., et al. 2020, *AJ*, 159, 110
- Iapichino, L. & Brüggen, M. 2012, *MNRAS*, 423, 2781
- Intema, H. T., van der Tol, S., Cotton, W. D., et al. 2009, *A&A*, 501, 1185
- Jaffe, W. J. 1977, *ApJ*, 212, 1
- Jaffe, W. J. & Perola, G. C. 1973, *A&A*, 26, 423
- Jee, M. J., Stroe, A., Dawson, W., et al. 2015, *ApJ*, 802, 46
- Jee, M. J. & Tyson, J. A. 2009, *ApJ*, 691, 1337
- Johnson, A. R., Rudnick, L., Jones, T. W., Mendygral, P. J., & Dolag, K. 2020, *ApJ*, 888, 101
- Jones, C. & Forman, W. 1984, *ApJ*, 276, 38
- Jones, T. W., Nolting, C., O'Neill, B. J., & Mendygral, P. J. 2017, *Physics of Plasmas*, 24, 041402
- Kalberla, P. M. W., Burton, W. B., Hartmann, D., et al. 2005, *A&A*, 440, 775
- Kale, R., Dwarakanath, K. S., Bagchi, J., & Paul, S. 2012, *MNRAS*, 426, 1204
- Kale, R., Venturi, T., Giacintucci, S., et al. 2015, *A&A*, 579, A92
- Kang, H. 2015, *Journal of Korean Astronomical Society*, 48, 9
- Kang, H. & Ryu, D. 2011, *ApJ*, 734, 18

- Kang, H. & Ryu, D. 2013, *ApJ*, 764, 95
- Kang, H. & Ryu, D. 2015, *ApJ*, 809, 186
- Kang, H. & Ryu, D. 2016, *ApJ*, 823, 13
- Kang, H., Ryu, D., & Jones, T. 2017, in *International Cosmic Ray Conference*, Vol. 301, 35th International Cosmic Ray Conference (ICRC2017), 283
- Kang, H., Ryu, D., & Jones, T. W. 2012, *ApJ*, 756, 97
- Kardashev, N. S. 1962, *Soviet Ast.*, 6, 317
- Kass, R. E. & Raftery, A. E. 1995, *Journal of the American Statistical Association*, 90, 773
- Katz-Stone, D. M., Rudnick, L., & Anderson, M. C. 1993, *ApJ*, 407, 549
- Kettula, K., Nevalainen, J., & Miller, E. D. 2013, *A&A*, 552, A47
- Kierdorf, M., Beck, R., Hoeft, M., et al. 2017, *A&A*, 600, A18
- King, I. R. 1972, *ApJ*, 174, L123
- Kitayama, T. & Suto, Y. 1996, *ApJ*, 469, 480
- Klein, U. & Fletcher, A. 2015, *Galactic and Intergalactic Magnetic Fields*
- Knowles, K., Baker, A. J., Bond, J. R., et al. 2019, *MNRAS*, 486, 1332
- Knowles, K., Pillay, D. S., Amodeo, S., et al. 2021, *MNRAS*, 504, 1749
- Kocevski, D. D., Ebeling, H., Mullis, C. R., & Tully, R. B. 2007, *ApJ*, 662, 224
- Komissarov, S. S. & Gubanov, A. G. 1994, *A&A*, 285, 27
- Kraichnan, R. H. & Nagarajan, S. 1967, *Physics of Fluids*, 10, 859
- Krauss-Varban, D. & Wu, C. S. 1989, *J. Geophys. Res.*, 94, 15367
- Lamee, M., Rudnick, L., Farnes, J. S., et al. 2016, *ApJ*, 829, 5
- Landau, L. D. & Lifshitz, E. M. 1959, *Fluid mechanics*
- Leahy, D. A. & Roger, R. S. 1998, *ApJ*, 505, 784
- Lindner, R. R., Baker, A. J., Hughes, J. P., et al. 2014, *ApJ*, 786, 49
- Lodders, K., Palme, H., & Gail, H.-P. 2009, *Landolt Börnstein*, 712
- Loi, F., Murgia, M., Govoni, F., et al. 2017, *MNRAS*, 472, 3605

- Loi, F., Murgia, M., Vacca, V., et al. 2020, MNRAS, 498, 1628
- Lovisari, L., Forman, W. R., Jones, C., et al. 2017, ApJ, 846, 51
- Macario, G., Markevitch, M., Giacintucci, S., et al. 2011, ApJ, 728, 82
- Mandal, S., Intema, H. T., van Weeren, R. J., et al. 2020, A&A, 634, A4
- Markevitch, M. 2006a, in ESA Special Publication, Vol. 604, The X-ray Universe 2005, ed. A. Wilson, 723
- Markevitch, M. 2006b, in ESA Special Publication, Vol. 604, The X-ray Universe 2005, ed. A. Wilson, 723
- Markevitch, M., Gonzalez, A. H., David, L., et al. 2002, ApJ, 567, L27
- Markevitch, M., Govoni, F., Brunetti, G., & Jerius, D. 2005, ApJ, 627, 733
- Markevitch, M., Sarazin, C. L., & Vikhlinin, A. 1999, ApJ, 521, 526
- Markevitch, M. & Vikhlinin, A. 2007, Phys. Rep., 443, 1
- Markevitch, M., Vikhlinin, A., & Forman, W. R. 2003, in Astronomical Society of the Pacific Conference Series, Vol. 301, Matter and Energy in Clusters of Galaxies, ed. S. Bowyer & C.-Y. Hwang, 37
- Markevitch, M., Vikhlinin, A., & Mazzotta, P. 2001, ApJ, 562, L153
- Massaro, E., Perri, M., Giommi, P., & Nesci, R. 2004, A&A, 413, 489
- Maughan, B. J., Jones, C., Jones, L. R., & Van Speybroeck, L. 2007, ApJ, 659, 1125
- Mazzotta, P., Markevitch, M., Forman, W. R., et al. 2001, arXiv e-prints, astro
- McMullin, J. P., Waters, B., Schiebel, D., Young, W., & Golap, K. 2007, in Astronomical Society of the Pacific Conference Series, Vol. 376, Astronomical Data Analysis Software and Systems XVI, ed. R. A. Shaw, F. Hill, & D. J. Bell, 127
- Medezinski, E., Umetsu, K., Okabe, N., et al. 2016, ApJ, 817, 24
- Merloni, A., Nandra, K., & Predehl, P. 2020, Nature Astronomy, 4, 634
- Merloni, A., Predehl, P., Becker, W., et al. 2012, arXiv e-prints, arXiv:1209.3114
- Miley, G. 1980, ARA&A, 18, 165
- Miller, T. B., Chapman, S. C., Aravena, M., et al. 2018, Nature, 556, 469

- Miniati, F. & Beresnyak, A. 2015, *Nature*, 523, 59
- Mohan, N. & Rafferty, D. 2015, *PyBDSM: Python Blob Detection and Source Measurement*, Astrophysics Source Code Library
- Molnar, S. M. & Broadhurst, T. 2017, *ApJ*, 841, 46
- Molnar, S. M. & Broadhurst, T. 2018, *ApJ*, 862, 112
- Mullin, L. M., Riley, J. M., & Hardcastle, M. J. 2008, *MNRAS*, 390, 595
- Murgia, M., Govoni, F., Feretti, L., et al. 2004, *A&A*, 424, 429
- Nandra, K., Barret, D., Barcons, X., et al. 2013, *arXiv e-prints*, arXiv:1306.2307
- Neeser, M. J., Eales, S. A., Law-Green, J. D., Leahy, J. P., & Rawlings, S. 1995, *ApJ*, 451, 76
- Nuza, S. E., Gelszinnis, J., Hoeft, M., & Yepes, G. 2017, *MNRAS*, 470, 240
- Nuza, S. E., Hoeft, M., van Weeren, R. J., Gottlöber, S., & Yepes, G. 2012, *MNRAS*, 420, 2006
- Offringa, A. R., de Bruyn, A. G., Biehl, M., et al. 2010, *MNRAS*, 405, 155
- Offringa, A. R., McKinley, B., Hurley-Walker, N., et al. 2014, *MNRAS*, 444, 606
- Offringa, A. R. & Smirnov, O. 2017, *MNRAS*, 471, 301
- Ogrean, G. 2017, in *American Astronomical Society Meeting Abstracts*, Vol. 229, American Astronomical Society Meeting Abstracts, 438.08
- Ogrean, G. A., Brüggen, M., Röttgering, H., et al. 2013, *MNRAS*, 429, 2617
- Ogrean, G. A., Brüggen, M., van Weeren, R., et al. 2014, *MNRAS*, 440, 3416
- Ogrean, G. A., van Weeren, R. J., Jones, C., et al. 2016, *ApJ*, 819, 113
- Okabe, N., Akamatsu, H., Kakuwa, J., et al. 2015, *PASJ*, 67, 114
- Oppermann, N., Junklewitz, H., Greiner, M., et al. 2015, *A&A*, 575, A118
- Orrù, E., Murgia, M., Feretti, L., et al. 2007, *A&A*, 467, 943
- Orrù, E., van Velzen, S., Pizzo, R. F., et al. 2015, *A&A*, 584, A112
- Osinga, E., van Weeren, R. J., Boxelaar, J. M., et al. 2021, *A&A*, 648, A11
- O'Sullivan, S. P., Brown, S., Robishaw, T., et al. 2012, *MNRAS*, 421, 3300

- O'Sullivan, S. P., Lenc, E., Anderson, C. S., Gaensler, B. M., & Murphy, T. 2018, *MNRAS*, 475, 4263
- Overzier, R. A. 2016, *A&A Rev.*, 24, 14
- Owen, F. N., Rudnick, L., Eilek, J., et al. 2014, *ApJ*, 794, 24
- Ozawa, T., Nakanishi, H., Akahori, T., et al. 2015, *PASJ*, 67, 110
- O'Neill, B. J., Jones, T. W., Nolting, C., & Mendygral, P. J. 2019, *The Astrophysical Journal*, 887, 26
- Pacholczyk, A. G. 1970, Radio astrophysics. Nonthermal processes in galactic and extragalactic sources
- Pearce, C. J. J., van Weeren, R. J., Andrade-Santos, F., et al. 2017, *ApJ*, 845, 81
- Pearson, K. 1895, *Proceedings of the Royal Society of London Series I*, 58, 240
- Peebles, P. J. E. 1980, *The large-scale structure of the universe*
- Perley, R. A. & Butler, B. J. 2013, *ApJS*, 206, 16
- Petrosian, V. 2001, *ApJ*, 557, 560
- Pfrommer, C. & Jones, T. W. 2011, *ApJ*, 730, 22
- Pierre, M., Pacaud, F., Juin, J. B., et al. 2011, *MNRAS*, 414, 1732
- Pierre, M., Valtchanov, I., Altieri, B., et al. 2004, *JCAP*, 2004, 011
- Pinzke, A., Oh, S. P., & Pfrommer, C. 2017, *MNRAS*, 465, 4800
- Pizzo, R. F., de Bruyn, A. G., Bernardi, G., & Brentjens, M. A. 2011, *A&A*, 525, A104
- Planck Collaboration, Ade, P. A. R., Aghanim, N., et al. 2016, *A&A*, 594, A27
- Planck Collaboration, Ade, P. A. R., Aghanim, N., et al. 2015, *A&A*, 582, A29
- Porter, D. H., Jones, T. W., & Ryu, D. 2015, *ApJ*, 810, 93
- Press, W. H. & Schechter, P. 1974, *ApJ*, 187, 425
- Prokhorov, D. A. & Churazov, E. M. 2014a, *A&A*, 567, A93
- Prokhorov, D. A. & Churazov, E. M. 2014b, *A&A*, 567, A93

- Rajpurohit, K., Hoeft, M., van Weeren, R. J., et al. 2018a, *ApJ*, 852, 65
- Rajpurohit, K., Hoeft, M., van Weeren, R. J., et al. 2018b, *ApJ*, 852, 65
- Rajpurohit, K., Vazza, F., Hoeft, M., et al. 2020, *A&A*, 642, L13
- Rajpurohit, K., Wittor, D., van Weeren, R. J., et al. 2021, *A&A*, 646, A56
- Rau, U. & Cornwell, T. J. 2011, *A&A*, 532, A71
- Reimer, O., Pohl, M., Sreekumar, P., & Mattox, J. R. 2003, *ApJ*, 588, 155
- Riseley, C. J., Scaife, A. M. M., Wise, M. W., & Clarke, A. O. 2017, *A&A*, 597, A96
- Robitaille, T. & Bressert, E. 2012, *APLpy: Astronomical Plotting Library in Python*, *Astrophysics Source Code Library*
- Roettiger, K., Burns, J. O., & Stone, J. M. 1999, *ApJ*, 518, 603
- Roh, S., Ryu, D., Kang, H., Ha, S., & Jang, H. 2019, *ApJ*, 883, 138
- Rossetti, M., Gastaldello, F., Eckert, D., et al. 2017, *MNRAS*, 468, 1917
- Rottgering, H. J. A., Wieringa, M. H., Hunstead, R. W., & Ekers, R. D. 1997, *MNRAS*, 290, 577
- Rudnick, L. 2001, in *Astronomical Society of the Pacific Conference Series*, Vol. 250, *Particles and Fields in Radio Galaxies Conference*, ed. R. A. Laing & K. M. Blundell, 372
- Rudnick, L. & Katz-Stone, D. 1996, *Powerful diagnostics of Cygnus A's relativistic electrons*, ed. C. L. Carilli & D. E. Harris, 158
- Rudnick, L. & Owen, F. N. 2014, *ApJ*, 785, 45
- Rumsey, C., Perrott, Y. C., Olamaie, M., et al. 2017, *MNRAS*, 470, 4638
- Russell, H. R., McNamara, B. R., Sanders, J. S., et al. 2012, *MNRAS*, 423, 236
- Russell, H. R., Sanders, J. S., Fabian, A. C., et al. 2010, *MNRAS*, 406, 1721
- Rybicki, G. B. & Lightman, A. P. 1986, *Radiative Processes in Astrophysics*
- Ryu, D., Kang, H., Cho, J., & Das, S. 2008, *Science*, 320, 909
- Sanders, J. S. 2006, *MNRAS*, 371, 829
- Sanders, J. S., Fabian, A. C., & Taylor, G. B. 2005, *MNRAS*, 356, 1022

- Sarazin, C. L. 2002, *The Physics of Cluster Mergers*, ed. L. Feretti, I. M. Gioia, & G. Giovannini, Vol. 272, 1–38
- Schekochihin, A. A. & Cowley, S. C. 2006, *Physics of Plasmas*, 13, 056501
- Schekochihin, A. A. & Cowley, S. C. 2007, *Turbulence and Magnetic Fields in Astrophysical Plasmas*, ed. S. Molokov, R. Moreau, & H. K. Moffatt, 85
- Schellenberger, G., Reiprich, T. H., Lovisari, L., Nevalainen, J., & David, L. 2015, *A&A*, 575, A30
- Schlegel, D. J., Finkbeiner, D. P., & Davis, M. 1998, *ApJ*, 500, 525
- Sereno, M., Giocoli, C., Izzo, L., et al. 2018, *Nature Astronomy*, 2, 744
- Shimwell, T. W., Brown, S., Feain, I. J., et al. 2014, *MNRAS*, 440, 2901
- Shimwell, T. W., Luckin, J., Brüggen, M., et al. 2016, *MNRAS*, 459, 277
- Shimwell, T. W., Markevitch, M., Brown, S., et al. 2015, *MNRAS*, 449, 1486
- Shimwell, T. W., Röttgering, H. J. A., Best, P. N., et al. 2017, *A&A*, 598, A104
- Shimwell, T. W., Tasse, C., Hardcastle, M. J., et al. 2019, *A&A*, 622, A1
- Simionescu, A., Nakashima, S., Yamaguchi, H., et al. 2019, *MNRAS*, 483, 1701
- Simionescu, A., Werner, N., Urban, O., et al. 2012, *ApJ*, 757, 182
- Skillman, S. W., Xu, H., Hallman, E. J., et al. 2013, *ApJ*, 765, 21
- Slee, O. B., Roy, A. L., Murgia, M., Andernach, H., & Ehle, M. 2001, *AJ*, 122, 1172
- Smirnov, O. M. & Tasse, C. 2015, *MNRAS*, 449, 2668
- Smith, R. K., Brickhouse, N. S., Liedahl, D. A., & Raymond, J. C. 2001, *ApJ*, 556, L91
- Smolčić, V., Novak, M., Delvecchio, I., et al. 2017, *A&A*, 602, A6
- Sokoloff, D. D., Bykov, A. A., Shukurov, A., et al. 1998, *MNRAS*, 299, 189
- Springel, V., Frenk, C. S., & White, S. D. M. 2006, *Nature*, 440, 1137
- Streblyanska, A., Barrena, R., Rubiño-Martín, J. A., et al. 2018, *A&A*, 617, A71
- Stroe, A., Harwood, J. J., Hardcastle, M. J., & Röttgering, H. J. A. 2014, *MNRAS*, 445, 1213

- Stroe, A., Shimwell, T., Rumsey, C., et al. 2016, MNRAS, 455, 2402
- Stroe, A., van Weeren, R. J., Intema, H. T., et al. 2013, A&A, 555, A110
- Stuardi, C., Bonafede, A., Wittor, D., et al. 2019, MNRAS, 2080
- Subramanian, K. 2016, Reports on Progress in Physics, 79, 076901
- Subramanian, K., Shukurov, A., & Haugen, N. E. L. 2006, MNRAS, 366, 1437
- Sunyaev, R. A. & Zeldovich, Y. B. 1972, Comments on Astrophysics and Space Physics, 4, 173
- Tasse, C. 2014, A&A, 566, A127
- Tasse, C., Hugo, B., Mirmont, M., et al. 2018, A&A, 611, A87
- Tasse, C., Shimwell, T., Hardcastle, M. J., et al. 2021, A&A, 648, A1
- Thierbach, M., Klein, U., & Wielebinski, R. 2003, A&A, 397, 53
- Tribble, P. C. 1991, MNRAS, 250, 726
- Urdampilleta, I., Akamatsu, H., Mernier, F., et al. 2018, A&A, 618, A74
- Urdampilleta, I., Mernier, F., Kaastra, J. S., et al. 2019, A&A, 629, A31
- Urry, C. M. & Padovani, P. 1995, PASP, 107, 803
- van der Burg, R. F. J., Aussel, H., Pratt, G. W., et al. 2016, A&A, 587, A23
- van Haarlem, M. P., Wise, M. W., Gunst, A. W., et al. 2013, A&A, 556, A2
- van Weeren, R. J., Andrade-Santos, F., Dawson, W. A., et al. 2017a, Nature Astronomy, 1, 0005
- van Weeren, R. J., Brüggen, M., Röttgering, H. J. A., & Hoeft, M. 2011a, MNRAS, 418, 230
- van Weeren, R. J., Brunetti, G., Brüggen, M., et al. 2016, ApJ, 818, 204
- van Weeren, R. J., de Gasperin, F., Akamatsu, H., et al. 2019, Space Sci. Rev., 215, 16
- van Weeren, R. J., Hoeft, M., Röttgering, H. J. A., et al. 2011b, A&A, 528, A38
- van Weeren, R. J., Intema, H. T., Lal, D. V., et al. 2014, ApJ, 781, L32
- van Weeren, R. J., Ogorean, G. A., Jones, C., et al. 2017b, ApJ, 835, 197

- van Weeren, R. J., Röttgering, H. J. A., Bagchi, J., et al. 2009, *A&A*, 506, 1083
- van Weeren, R. J., Röttgering, H. J. A., Brüggen, M., & Hoeft, M. 2010, *Science*, 330, 347
- van Weeren, R. J., Röttgering, H. J. A., Intema, H. T., et al. 2012, *A&A*, 546, A124
- van Weeren, R. J., Shimwell, T. W., Botteon, A., et al. 2020, arXiv e-prints, arXiv:2011.02387
- Vazza, F. & Brüggen, M. 2014, *MNRAS*, 437, 2291
- Vazza, F., Brüggen, M., Gheller, C., & Brunetti, G. 2012a, *MNRAS*, 421, 3375
- Vazza, F., Brüggen, M., van Weeren, R., et al. 2012b, *MNRAS*, 421, 1868
- Vazza, F., Brunetti, G., Brüggen, M., & Bonafede, A. 2018, *MNRAS*, 474, 1672
- Vazza, F., Jones, T. W., Brüggen, M., et al. 2017, *MNRAS*, 464, 210
- Venturi, T., Giacintucci, S., Brunetti, G., et al. 2007, *A&A*, 463, 937
- Vikhlinin, A., Kravtsov, A., Forman, W., et al. 2006, *ApJ*, 640, 691
- Vikhlinin, A., Markevitch, M., Murray, S. S., et al. 2005, *ApJ*, 628, 655
- Vogelsberger, M., Genel, S., Springel, V., et al. 2014, *MNRAS*, 444, 1518–1547
- Walker, S. A., ZuHone, J., Fabian, A., & Sanders, J. 2018, *Nature Astronomy*, 2, 292–296
- Wilber, A., Brüggen, M., Bonafede, A., et al. 2019, *A&A*, 622, A25
- Wilber, A., Brüggen, M., Bonafede, A., et al. 2018, *MNRAS*, 473, 3536
- Williams, W. L., van Weeren, R. J., Röttgering, H. J. A., et al. 2016, *MNRAS*, 460, 2385
- Willingale, R., Starling, R. L. C., Beardmore, A. P., Tanvir, N. R., & O’Brien, P. T. 2013, *MNRAS*, 431, 394
- Willis, J. P., Canning, R. E. A., Noordeh, E. S., et al. 2020, *Nature*, 577, 39
- Willis, J. P., Clerc, N., Bremer, M. N., et al. 2013, *MNRAS*, 430, 134
- Wittor, D., Hoeft, M., Vazza, F., Brüggen, M., & Domínguez-Fernández, P. 2019, *MNRAS*, 490, 3987

- Wittor, D., Vazza, F., & Brüggen, M. 2017, MNRAS, 464, 4448
- Wu, C. S. 1984, J. Geophys. Res., 89, 8857
- Xu, H., Li, H., Collins, D. C., Li, S., & Norman, M. L. 2011, ApJ, 739, 77
- Zhuravleva, I., Churazov, E., Schekochihin, A. A., et al. 2019, Nature Astronomy, 3, 832
- Zohren, H., Schrabback, T., van der Burg, R. F. J., et al. 2019, MNRAS, 488, 2523
- ZuHone, J. A., Miller, E. D., Bulbul, E., & Zhuravleva, I. 2018, The Astrophysical Journal, 853, 180
- ZuHone, J. A. & Roediger, E. 2016, Journal of Plasma Physics, 82