Curriculum Vitae 13/2/2023: Andrew J. S. Hamilton

Andrew J. S. Hamilton,
Fellow, JILA,
Professor, Dept. of Astrophysical and Planetary Sciences,
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Hamilton's professional interests include astrophysics, relativity, and cosmology.

Education

Ph.D. Astrophysics (1984) University of Virginia.

Employment History

July 2014–June 2017, Chair, Dept. of Astrophysical & Planetary Sciences, CU Boulder.
Sep 2011–present, Professor, Physics, CU Boulder (courtesy appointment).
July 2010–present, President, Black Hole Visualizations, LLC.
Jan 2009–Dec 2010, Chair, JILA.
Jan 2007–Dec 2008, Associate Chair, JILA.
July 2001–present, Professor, Dept. of Astrophysical & Planetary Sciences, CU Boulder.
Sep 2001–Aug 2002, Visiting Professor, Denver Museum of Nature and Science.
July 1993–July 2001, Assoc. Professor, APS Dept., CU Boulder.
Sep 1993–Aug 1994, Senior PPARC UK Visiting Fellow, Oxford University.
Sep 1987–present, Fellow, JILA
Aug 1986–July 1993, Assistant Professor, APS Dept., CU Boulder.
Sep 1983–Aug 1986 Lyman Spitzer Fellow in Theoretical Astrophysics, Princeton University.

Honors

Sep 2001–Aug 2002, Faculty Fellowship, CU Council of Creative Research and Work.
NSF Presidential Young Investigator, 1987–1992.

Refereed publications

arXiv: https://arxiv.org/a/hamilton_a_1.html
NASA/ADS: https://ui.adsabs.harvard.edu/search/q=orcid%3A"0000-0002-3816-5973"

1. Andrew J. S. Hamilton & Tyler McMaken (2024) "A twelve dimensional bosonic string theory" Phys. Rev. Lett., submitted
2. Andrew J. S. Hamilton & Tyler McMaken (2024) "Spin(11,1) String Theory" Phys. Rev. D, submitted
3. Tyler McMaken & Andrew J. S. Hamilton (2024) "Hawking radiation inside a rotating black hole" Phys. Rev. D, in press, 28 pages arXiv:2401.03098
4. Andrew J. S. Hamilton (2024) "The Supergeometric Algebra as the Language of Physics" Invited talk, DaSilva, D. Hildenbrand, E. Hitzer (eds.), Advanced Computational Applications of Geometric Algebra — First International Conference, ICACGA 2022, Denver, CO, USA, October 2-5, 2022, Proceedings, LNCS Vol. 13771, SpringerNature, Cham, Switzerland, 236 pages, pp. 161–173 doi:10.1007/978-3-031-34031-4
5. Tyler McMaken & Andrew J. S. Hamilton (2023) "Hawking radiation inside a charged black hole" Phys. Rev. D 107, 085010, 26 pages doi:10.1103/PhysRevD.107.085010 arXiv:2301.12319

6. Andrew J. S. Hamilton (2023) "Six bits" NO honorable mention in the 2023 Essay Competition of the Gravity Research Foundation arXiv:2308.12293
7. Andrew J. S. Hamilton (2023) "Unification of the four forces in the Spin(11,1) geometric algebra" Physica Scripta 98, 085306, 52 pages doi:10.1088/1402-4896/acdaff arXiv:2307.01243
8. Andrew J. S. Hamilton (2023) "The Supergeometric Algebra" Adv. Appl. Clifford Algebras 33:12, 29 pages, doi:10.1007/s00006-022-01256-6, arXiv:2212.11998
9. Andrew J. S. Hamilton (2023) "The rules of 4-dimensional perspective: How to implement Lorentz transformations in relativistic visualization" Extended version of publication 13, Adv. Appl. Clifford Algebras 33:13, 21 pages doi:10.1007/s00006-022-01257-5
10. Andrew J. S. Hamilton & Tyler McMaken (2022) "Wave equations in conformally separable, accreting, rotating black holes" Phys. Rev. D 106, 124031, 26 pages arXiv:2209.14752 doi:10.1103/PhysRevD.106.124031
11. Andrew J. S. Hamilton (2022) "The Black Hole Flight Simulator" Invited talk at The First International Conference on Advanced Computational Applications of Geometric Algebra (ICACGA) October 2022
12. Tyler McMaken & Andrew J. S. Hamilton (2022) "Renormalization of $\langle\phi^2\rangle$ at the inner horizon of rotating, accreting black holes" Phys. Rev. D 105, 125020, 12 pages arXiv:2204.03224 doi:10.1103/PhysRevD.105.125020
13. Andrew J. S. Hamilton (2021) "The rules of 4-dimensional perspective: How to implement Lorentz transformations in relativistic visualization" Invited refereed keynote lecture at the ENGAGE 2021 workshop at the Computer Graphics International CGI 2021 conference, 6–10 Sep 2021, 38th Computer Graphics International Conference CGI 2021, Proceedings, eds. N. Magnenat-Thalmann, V. Interrante, D. Thalmann, G. Papagiannakis, B. Sheng, J. Kim, M. Gavrilova, pages 705–717 arXiv:2111.09307
14. Tyler McMaken & Andrew J. S. Hamilton (2021) "Geometry near the inner horizon of a rotating, accreting black hole" Phys. Rev. D 103, 084014, 19 pages doi:10.1103/PhysRevD.103.084014 arXiv:2102.10402
15. Andrew J. S. Hamilton (2019) "Inside Black Holes" Proceedings of The Fifteenth Marcel Grossmann Meeting, Invited talk arXiv:1907.05292.
16. Andrew J. S. Hamilton (2018) "Hawking radiation inside a Schwarzschild black hole" General Relativity and Gravitation 50:50, 45 pages arXiv:1611.05524. doi:10.1007/s10714-018-2369-1
17. Andrew J. S. Hamilton (2017) "Inflation followed by BKL collapse inside accreting, rotating black holes" Phys. Rev. D 96, 084041 arXiv:1703.01921
18. Andrew J. S. Hamilton (2017) "A covariant Hamiltonian tetrad approach to numerical relativity" Phys. Rev. D 96, 124027 arXiv:1611.05523
19. A. Gayler Harford & Andrew J. S. Hamilton (2017) "A Model For Intergalactic Filaments and Galaxy Formation During the First Gigayear" Mon. Not. Roy. Astron. Soc, 471, 4760–4775 arXiv:1601.01737
20. Robert A. Fesen, Kathryn E. Weil, Peter A. Hoeflich, Andrew J. Hamilton (2017) "Optical and UV Spectra of the Remnant of SN 1885 (S And) in M31" Astrophys. J. 848, 130 (17 pages) arXiv:1603.04895
21. Robert A. Fesen, Peter A. Höflich, Andrew J. S. Hamilton (2015) "The 2D Distribution of Iron-rich Ejecta in the Remnant of SN 1885 in M31" Astrophys. J. 804, 140 (13 pages) arXiv:1412.3815
22. Andrew J. S. Hamilton (2015) "Black holes are for real: horizons, black hole interiors, and singularities" invited talk, Proceedings of the conference "Relativistic Jets: Creation, Dynamics, and Internal Physics" available online at http://www.oa.uj.edu.pl/jets2015/Program.html

23. Andrew J. S. Hamilton (2014) "Illusory horizons, thermodynamics, and holography inside black holes" in "Relativity and Gravitation, 100 Years after Einstein in Prague" ed. Jiří Bičák & Tomás Ledvinka, Springer Proceedings in Physics, Proceedings of a conference in Prague, Czech Republic, June 25–29, 2012 arXiv:1210.4541
24. Andrew J. S. Hamilton (2013) "The Black Hole Particle Accelerator as a Machine to make Baby Universes" NO honorable mention in the 2013 Essay Competition of the Gravity Research Foundation arXiv:1305.4524
25. Andrew J. S. Hamilton (2012) "Towards a general description of the interior structure of rotating black holes" arXiv:1108.3512
26. Andrew J. S. Hamilton, Gavin Polhemus (2011) "The interior structure of rotating black holes 1. Concise derivation" Phys. Rev. D 84, 124055 arXiv:1010.1269
27. Andrew J. S. Hamilton (2011) "The interior structure of rotating black holes 2. Uncharged black holes" Phys. Rev. D 84, 124056 arXiv:1010.1271
28. Andrew J. S. Hamilton (2011) "The interior structure of rotating black holes 3. Charged black holes" Phys. Rev. D 84, 124057 arXiv:1010.1272
29. P. Frank Winkler, Andrew J. S. Hamilton, Knox S. Long, Robert A. Fesen (2011) "Time Evolution of the Reverse Shock in SN 1006" Astrophys. J. 742, 80 arXiv:1109.0204
30. A. Gayler Harford & Andrew J. S. Hamilton (2011) "Intergalactic Filaments as Isothermal Gas Cylinders" MNRAS 416, 2678–2687 arXiv:1012.1293
31. Pedro P. Avelino, Andrew J. S. Hamilton, Carlos A. R. Herdeiro, M. Zilhão (2011) "Mass inflation in a D dimensional Reissner-Nordström black hole: a hierarchy of particle accelerators?" Phys. Rev. D 84, 024019 arXiv:1105.4434
32. Andrew J. S. Hamilton, Gavin Polhemus (2010) "Stereoscopic visualization in curved spacetime: seeing deep inside a black hole" New Journal of Physics, 12, 123027 arXiv:1012.4043
33. Andrew J. S. Hamilton, Pedro P. Avelino (2010) "The physics of the relativistic counterstreaming instability that drives mass inflation inside black holes" Physics Reports, **495** 1–32 arXiv:0811.1926
34. Gavin Polhemus, Andrew J. S. Hamilton (2010) "Large entropy production inside black holes: a simple model" Journal of High Energy Physics, 2010, 093 arXiv:0903.2290
35. Pedro P. Avelino, Andrew J. S. Hamilton, Carlos A. R. Herdeiro (2009) "Mass Inflation in Brans-Dicke gravity" Phys. Rev. D 79, 124045 arXiv:0904.2669
36. Andrew J. S. Hamilton (2009) "The interior structure of slowly rotating black holes" Class. Quantum Grav. 26, 165006 (25 pp) arXiv:0903.2021
37. W. Benger, A. Hamilton, M. Folk, Q. Koziol, S. Su, E. Schnetter, M. Ritter, G. Ritter (2009) "Using geometric algebra for navigation in Riemannian and hard disc space" featured presentation at the GraVisMa (Computer Graphics, Computer Vision and Mathematics) conference at Plzen, Czech Republic, September 2009 http://gravisma.zcu.cz/
38. Robyn Levine, Nickolay Y. Gnedin, Andrew J. S. Hamilton (2009) "Measuring gas accretion and angular momentum near simulated supermassive black holes" Astrophys. J. 716, 1386–1396 arXiv:1004.3785
39. Gavin Polhemus, Andrew J. S. Hamilton, Colin S. Wallace (2009) "Entropy creation inside black holes points to observer complementarity" Journal of High Energy Physics, 2009, 016 arXiv:0903.2290
40. A. Gayler Harford, Andrew J. S. Hamilton, Nickolay Y. Gnedin (2008) "Intergalactic baryon-rich regions at high redshift" MNRAS, 389, 880–888 arXiv:0805.2191
41. Robyn Levine, Nickolay Y. Gnedin, Andrew J. S. Hamilton, Andrey V. Kravtsov (2008) "Resolv-

ing Gas Dynamics in the Circumnuclear Region of a Disk Galaxy in a Cosmological Simulation" Astrophys. J. 678, 154–167 arXiv:0711.3478
42. Molly E. C. Swanson, Max Tegmark, Andrew J. S. Hamilton, J. Colin Hill (2008) "Methods for Rapidly Processing Angular Masks of Next-Generation Galaxy Surveys" MNRAS, 387, 1291–1402 arXiv:0711.4352
43. Andrew J. S. Hamilton, Jason P. Lisle (2008) "The River Model of Black Holes" American Journal of Physics, 76, 519–532 arXiv:gr-qc/0411060
44. Andrew J. S. Hamilton, Robert A. Fesen, William P. Blair (2007) "A high resolution UV absorption spectrum of supernova ejecta in SN1006" MNRAS, 381, 771–778 arXiv:astro-ph/0602553
45. Robert A. Fesen, Peter A. Höflich, Andrew J. S. Hamilton, Molly C. Hammell, Christopher L. Gerardy, Alexei M. Khokhlov, J. Craig Wheeler (2007) "The Chemical Distribution in a Subluminous Type Ia Supernova: Hubble Space Telescope Images of the SN 1885 Remnant" Astrophys. J. 658, 396–409 arXiv:astro-ph/0611779
46. K. Kohler, N. Y. Gnedin, A. J. S. Hamilton (2007) "Large-Scale Simulations of Reionization" Astrophys. J. 657, 15–29 arXiv:astro-ph/0511627
47. M. Tegmark, D. Eisenstein, M. Strauss, D. Weinberg, M. Blanton, J. Frieman, M. Fukugita, J. Gunn, A. Hamilton, G. Knapp, R. Nichol, J. Ostriker, N. Padmanabhan, W. Percival, D. Schlegel, D. Schneider, R. Scoccimarro, U. Seljak, H. Seo, M. Swanson, A. Szalay, M. Vogeley, J. Yoo, I. Zehavi, and others (2006) "Cosmological Constraints from the SDSS Luminous Red Galaxies" Phys. Rev. D, 74, 123507 arXiv:astro-ph/0608632
48. C. D. Rimes, A. J. S. Hamilton (2006) "Information content of the non-linear power spectrum: the effect of beat-coupling to large scales" MNRAS, 371, 1205–1215 arXiv:astro-ph/0511418
49. A. J. S. Hamilton, C. D. Rimes, R. Scoccimarro (2006) "On measuring the covariance matrix of the nonlinear power spectrum from simulations" MNRAS, 371, 1188–1204 arXiv:astro-ph/0511416
50. P. Frank Winkler, Knox S. Long, Andrew J. S. Hamilton, Robert A. Fesen (2005) "Probing Multiple Sight Lines through the SN 1006 Remnant by Ultraviolet Absorption Spectroscopy" Astrophysical Journal, 624, 189–197 arXiv:astro-ph/0602555
51. Mark C. Neyrinck, Andrew J.S. Hamilton, Nickolay Y. Gnedin (2005) "A galaxy-halo model of large-scale structure" Mon. Not. Roy. Astron. Soc., 362, 337–348 arXiv:astro-ph/0504161
52. Christopher D. Rimes and Andrew J. S. Hamilton (2005) "Information content of the non-linear matter power spectrum" Mon. Not. Roy. Astron. Soc.: Letters, 360, L82–L86 arXiv:astro-ph/0502081
53. Andrew J. S. Hamilton and Scott E. Pollack (2005) "Inside Charged Black Holes I. Baryons" Physical Review D 71, 084031, 31 pages arXiv:gr-qc/0411061
54. Andrew J. S. Hamilton and Scott E. Pollack (2005) "Inside Charged Black Holes II. Baryons plus Dark Matter" Physical Review D 71, 084032, 18 pages arXiv:gr-qc/0411062
55. Mark C. Neyrinck, Nickolay Y. Gnedin, and Andrew J. S. Hamilton (2005) "VOBOZ: An Almost-Parameter-Free Halo-Finding Algorithm" Mon. Not. Roy. Astron. Soc., 356, 1222 arXiv:astro-ph/0402346
56. M. Tegmark, M. Blanton, M. Strauss, F. Hoyle, D. Schlegel, R. Scoccimarro, M. Vogeley, D. Weinberg, I. Zehavi, A. Berlind, T. Budavari, A. Connolly, D. Eisenstein, D. Finkbeiner, J. Frieman, J. Gunn, A. Hamilton, L. Hui, B. Jain, D. Johnston, S. Kent, H. Lin, R. Nakajima, R. Nichol, J. Ostriker, A. Pope, R. Scranton, U. Seljak, R. Sheth, A. Stebbins, A. Szalay, I. Szapudi, L. Verde, Y. Xu, 26 others, for the SDSS Collaboration (2004) "The 3D power spectrum of galaxies from the SDSS" Astrophysical Journal, 606, 702–740 arXiv:astro-ph/0310725

57. Angelica de Oliveira-Costa, Max Tegmark, Matias Zaldarriaga and Andrew Hamilton (2004) "The significance of the largest scale CMB fluctuations in WMAP" Phys. Rev. D 69, 063516 arXiv:astro-ph/0307282
58. A. J. S. Hamilton and Max Tegmark (2004) "A scheme to deal accurately and efficiently with complex angular masks in galaxy surveys" Mon. Not. Roy. Astron. Soc., 349, 115–128 arXiv:astro-ph/0306324
59. Mark C. Neyrinck, Andrew J. S. Hamilton and Nickolay Y. Gnedin (2004) "Understanding the PSCz Galaxy Power Spectrum with N-body Simulations" Mon. Not. Roy. Astron. Soc., 348, 1–11 arXiv:astro-ph/0302003
60. Max Tegmark, Angelica de Oliveira-Costa and Andrew Hamilton (2003) "A high resolution foreground cleaned CMB map from WMAP" Phys. Rev. D, 68, 123523 (14 pages) arXiv:astro-ph/0302496
61. Max Tegmark, Andrew J. S. Hamilton and Yongzhong Xu (2002) "The power spectrum of galaxies in the 2dF 100k redshift survey" Mon. Not. Roy. Astron. Soc. 335, 887–908 arXiv:astro-ph/0111575
62. Nickolay Y. Gnedin, Andrew J. S. Hamilton (2002) "Matter Power Spectrum from the Lyman-Alpha Forest: Myth or Reality?" Mon. Not. Roy. Astron. Soc. 334, 107–116 arXiv:astro-ph/0111194
63. S. Hannestad, S. H. Hansen, F. L. Villante and A. J. S. Hamilton (2002) "Constraints on inflation from CMB and Lyman-alpha forest" Astroparticle Physics, 17, 375–382 arXiv:astro-ph/0103047
64. A. J. S. Hamilton and M. Tegmark (2002) "The real space power spectrum of the PSCz survey from 0.01 to 300 h/Mpc" Mon. Not. Roy. Astron. Soc. 330, 506–530 arXiv:astro-ph/0008392
65. M. Tegmark, M. Zaldarriaga and A. J. S. Hamilton (2001) "Towards a refined cosmic concordance model: Joint 11-parameter constraints from CMB and large-scale structure" Phys. Rev. D 63, 043007–043020 arXiv:astro-ph/0008167
66. A. J. S. Hamilton (2001) "Formulae for growth factors in expanding universes containing matter and a cosmological constant" Mon. Not. Roy. Astron. Soc. 322, 419–425, arXiv:astro-ph/0006089
67. N. Padmanabhan, M. Tegmark and A. J. S. Hamilton (2001) "The power spectrum of the CfA/SSRS UZC galaxy redshift survey" Astrophys. J. 550, 52–64, arXiv:astro-ph/9911421
68. A. J. S. Hamilton, M. Tegmark and N. Padmanabhan (2000) "Linear redshift distortions and power in the PSCz survey" Mon. Not. Roy. Astron. Soc. 317, L23–L27 arXiv:astro-ph/0004334
69. A. J. S. Hamilton and R. A. Fesen (2000) "An Ultraviolet Fe II image of SN 1885 in M31" Astrophys. J. 542, 779 arXiv:astro-ph/9907102
70. A. J. S. Hamilton and M. Tegmark (2000) "Decorrelating the power spectrum of galaxies" Mon. Not. Roy. Astron. Soc. 312, 285–294 arXiv:astro-ph/9905192
71. A. J. S. Hamilton (2000) "Uncorrelated modes of the nonlinear power spectrum" Mon. Not. Roy. Astron. Soc. 312, 257–284 arXiv:astro-ph/9905191
72. R. A. Fesen, C. L. Gerardy, K. M. McLin and A. J. S. Hamilton (1999) "Hubble Space Telescope images and spectra of the remnant of SN 1885 in M31" Astrophys. J. 514, 195–201 arXiv:astro-ph/9810002
73. M. Tegmark, A. J. S. Hamilton, M. A. Strauss, M. S. Vogeley and A. S. Szalay (1998) "Measuring the galaxy power spectrum with future redshift surveys" Astrophys. J. 499, 555–576 arXiv:astro-ph/9708020
74. A. J. S. Hamilton (1998) "Linear Redshift Distortions: A Review" invited review in "The Evolving Universe" Proceedings of the Ringberg Workshop on Large-Scale Structure, held at Ringberg Castle, Germany, 23-28 September 1996, ed. D. Hamilton, Kluwer Academic, Dor-

drecht, 185–275 arXiv:astro-ph/9708102
75. A. J. S. Hamilton (1997) "Towards optimal measurement of power spectra II: a basis of positive, compact, statistically orthogonal kernels" Mon. Not. Roy. Astron. Soc. 289, 295–304 arXiv:astro-ph/9701009
76. A. J. S. Hamilton (1997) "Towards optimal measurement of power spectra I: Minimum variance pair weighting and the Fisher matrix" Mon. Not. Roy. Astron. Soc. 289, 285–294 arXiv:astro-ph/9701008
77. C.-C. Wu, D. M. Crenshaw, A. J. S. Hamilton, R. Fesen, M. Leventhal and C. L. Sarazin (1997) "Far-UV absorption lines in the remnant of SN 1006" Astrophys. J. 477, L53–56 arXiv:astro-ph/9701048
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79. A. N. Taylor and A. J. S. Hamilton (1996) "Nonlinear cosmological power spectra in real and redshift space" Mon. Not. Roy. Astron. Soc. 282, 767–778 arXiv:astro-ph/9604020
80. A. J. S. Hamilton and M. Culhane (1996) "Spherical redshift distortions" Mon. Not. Roy. Astron. Soc. 278, 73–86 arXiv:astro-ph/9507021
81. A. J. S. Hamilton (1995) "Redshift Distortions and Omega in IRAS Surveys" invited review in "Clustering in the Universe", Proc. XXXth Rencontres Moriond, held at Les Arcs, France, 11-18 March 1995, ed. S. Maurogordato, C. Balkowski, C. Tao & J. Tran Thanh Van, Editions Frontiéres, 143–155 arXiv:astro-ph/9507022
82. E. Bertschinger and A. J. S. Hamilton (1994) "Lagrangian evolution of the Weyl tensor" Astrophys. J. 435, 1–7 arXiv:astro-ph/9403016
83. A. J. S. Hamilton (1993) "Towards better ways to measure the galaxy correlation function" Astrophys. J. 417, 19–35
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85. A. J. S. Hamilton (1993) "Omega from the anisotropy of the redshift correlation function in the IRAS 2 Jansky survey" Astrophys. J. (Letters) 406, L47–50,
86. A. J. S. Hamilton (1992) "Measuring Omega and the real correlation function from the redshift correlation function" Astrophys. J. (Letters) 385, L5–8
87. A. J. S. Hamilton, P. Kumar, E. Lu and A. Matthews (1991) "Reconstructing the primordial spectrum of fluctuations of the Universe from the observed nonlinear clustering of galaxies" Astrophys. J. (Letters) 374, L1–4; erratum in Astrophys. J. (Letters) 442, L73 (1995)
88. D. A. Leahy, J. Nousek and A. J. S. Hamilton (1991) "HEAO-l A2 low energy detector X-ray spectra of the Lupus Loop and SN 1006" Astrophys. J. 374, 218–226
89. A. L. Melott, A. P. Cohen, A. J. S. Hamilton, J. R. Gott III and D. H. Weinberg (1989) "Topology of large scale structure IV: Topology in two dimensions" Astrophys. J. 345, 618–626
90. R. A. Fesen, A. J. S. Hamilton and J. M. Saken (1989) "Discovery of the remnant of S Andromedae (SN 1885) in M31" Astrophys. J. (Letters) 341, L55–57
91. J. R. Gott III, J. Miller, T. X. Thuan, S. E. Schneider, D. H. Weinberg, C. Gammie, K. Polk, M. Vogeley, S. Jeffrey, S. P. Bhavsar, A. L. Melott, R. Giovanelli, M. P. Haynes, R. B. Tully and A. J. S. Hamilton (1989) "The topology of large-scale structure. III. Analysis of observations" Astrophys. J. 340, 625–646
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94. A. J. S. Hamilton (1988) "Evidence for biasing in the CfA survey" Astrophys. J. (Letters) 331, L59–62
95. A. J. S. Hamilton and R. A. Fesen (1988) "The reionization of unshocked ejecta in SN 1006" Astrophys. J. 327, 178–196
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100. A. J. S. Hamilton, C. L. Sarazin, A. E. Szymkowiak and M. H. Vartanian (1985) "X-ray spectra of young type I supernova remnants: Exploded white dwarfs?" Astrophys. J. (Letters) 297, L5–L9
101. A. J. S. Hamilton, W. C. Saslaw and T. X. Thuan (1985) "Thermodynamics and galaxy clustering: Analysis of the Center for Astrophysics redshift catalog" Astrophys. J. 297, 37–48
102. A. J. S. Hamilton (1985) "Galaxy clustering and the method of voids" Astrophys. J. (Letters) 292, L35–L38
103. A. J. S. Hamilton (1985) "Similarity solutions for the structure of supernova blast waves driven by clumped ejecta I. Undecelerated clumps" Astrophys. J. 291, 523–543
104. A. J. S. Hamilton and C. L. Sarazin (1984) "Heating and cooling in reverse shocks in pure heavy element supernova ejecta" Astrophys. J. 287, 282–294
105. A. J. S. Hamilton and C. L. Sarazin (1984) "X-ray emission from supernova remnants II. The effect of remnant structure on nonequilibrium X-ray spectra" Astrophys. J. 284, 601–611
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107. W. C. Saslaw and A. J. S. Hamilton (1984) "Thermodynamics and galaxy clustering: Nonlinear theory of high order correlations" Astrophys. J. 276, 13–25
108. A. J. S. Hamilton and C. L. Sarazin (1983) "Deceleration of grand unified theory monopoles in a plasma" Astrophys. J. 274, 399–407
109. A. J. S. Hamilton, C. L. Sarazin and R. A. Chevalier (1983) "X-ray line emission from supernova remnants I. Models for adiabatic remnants" Astrophys. J. Suppl. 51, 115–148
110. A. J. S. Hamilton and C. L. Sarazin (1982) "Gravitational spin precession in binary systems" Mon. Not. Roy. Astron. Soc. 198, 59–70
111. A. J. S. Hamilton (1976) "The triangulation of 3-manifolds" Quart. J. Math. Oxford (2), 27, 63–70

Courses taught since 2000

ASTR 5110 Atomic and Molecular Physics (Fall 22, 20, 13).
ASTR 5770 Cosmology (Fall 21, 18, 14, 06).
PHYS 5770 Gravitational Theory (General Relativity) (Spring 16, 14, 13, 10, 08, 01)
ASTR 3740 Relativity & Cosmology (Spring 23, 22, 21, 20, 19, 17, 14, 07, 04, 00).

ASTR 2030 Black Holes (Spring/Fall 19, 12, 11, 09, 06, 05, 03, 02).
ASTR 2010 Cosmology (Spring 22).
ASTR 1200 Stars & Galaxies (Spring 18).
ASTR 1120 General Asronomy: Stars & Galaxies (Spring/Fall 07, 05, 03, 00).

Media publications

The proposer is known for his scientifically accurate general relativistic visualizations of black holes, which have appeared in various venues.

1. "What would we see if we fell into a Black Hole?" (2021) YouTube video by Alessandro Roussel author of ScienceClic https://www.youtube.com/watch?v=4rTv9wvvat8
2. "At the intersection of two infinities" (2019) musical spectacle, Krakow, 15 Sep 2019, during the Congress of Polish Physicists https://www.youtube.com/watch?v=f2OBe31NQSw&feature=youtu.be&t=73m38s
3. "What if you fell into a Black Hole?" (2019) YouTube video by Astrogeekz https://www.youtube.com/watch?v=F39cjxwcais
4. "Inside a Black Hole: What's beyond the Event Horizon? Other Universes?"(2019) YouTube video by Arvin Ash. https://www.youtube.com/watch?v=iUr8Obv_DeA
5. "Ask Ethan: What's It Like When You Fall Into A Black Hole?" (2019) 2019/06/01 Ethan Siegel, Article in Forbes Magazine https://www.forbes.com/sites/startswithabang/2019/06/01/ask-ethan-whats-it-like-when-you-fall-into-a-black-hole/#74b4b8b37741
6. "What Is a Black Hole? Here's Our Guide for Earthlings" (2019) JoAnna Klein & Dennis Overbye, New York Times 2019/04/10 https://www.nytimes.com/2019/04/10/science/what-is-black-hole.html?
7. "What happens to you if you fall into a black hole?" (2016) BBC Earth video http://www.bbc.com/earth/story/20160429-what-happens-to-you-if-you-fall-into-a-black-hole
8. "Future Earth" (2015) documentary https://www.youtube.com/watch?v=X8rFs1TFrYk
9. "Das grösste Loch des Universums" (2013) 2/13 edition of Welt der Wunder.
10. "Science Fiction in Deutschland" (2013) Exhibition, 23 Nov 2012-–1 Apr 2013, http://www.hdg.de/bonn/ausstellungen/wechselausstellungen/ausstellungen/science-fiction-in-deutschland/
11. "What an astronaut sees when they cross the event horizon" (translation from Polish) (2012) Swiat Nauki (Scientific American Polish Edition).
12. "Schrödingers katt 26.04.12" (2012) NRK (Norwegian TV).
13. "What a trip through a wormhole would look like" (2012) New Scientist featured video. Ranked seventh in New Scientist's best videos of 2012.
14. "Fabric of the Cosmos" (2011) four-part NOVA PBS series with Brian Greene on the nature of space and time.
15. "Black Hole 1" (2011) episode of NHK's (Japan Broadcasting Corporation's) "Cosmic Front" series.
16. "Beginning of the End" (2011) 23 June episode of National Geographic Channel's "Known Universe" series.
17. "Beyond the Event Horizon" (2011) by Steve Nadis, cover article for June 2011 issue of Discover magazine.
18. "Black Hole Odyssey" (2010) series 2, episode 8 of Discovery Channel's "Sci Fi Science: Physics of the Impossible" with Michio Kaku.
19. "Black Holes and Holographic Worlds" streamed live from the 2010 World Science Festival in New York https://www.youtube.com/watch?v=7f9d7XZu8UQ&list=PLKy-B3Qf_RDV0Nxj-XsfgqUBbuMdG

index=5

20. "How the Universe Works: Black Holes" (2010) TV documentary, Discovery Channel.
21. "Inside Black Holes" (2010) website jila.colorado.edu/~ajsh/insidebh/
22. "Black Holes Explained" (2009) Educational DVD by Alex Filippenko, published by The Teaching Company.
23. "Black Holes: Space Warps & Time Twists" (2009) Museum exhibit, Boston Museum of Science.
24. "Astronomers take virtual plunge into black hole" (2009) CNN featured video.
25. "What would it look like to fall into a black hole?" (2009) New Scientist featured video. According to James Urquhart, web video producer at New Scientist, this was New Scientist's number one most popular video of 2009. Posted on YouTube.
26. "Monster Black Holes" (2008) National Geographic "Naked Science" series.
27. "Monster of the Milky Way" (2006) NOVA PBS documentary on black holes.
28. "Black Holes: The Other Side of Infinity" (2006) Immersive digital dome show produced by the Denver Museum of Nature and Science. Distributed by Spitz, Inc.

Current students (advised or co-advised)

Tyler McMaken (graduate, Physics), Vince Herr (graduate, Mathematics, CU Denver), Carter Nestell (undergraduate, Astrophysics)

Past graduate students (advised or co-advised)

Mike Culhane (PhD 2000), Scott Pollack (PhD 2005), Mark Neyrinck (PhD 2005), Katharina Kohler (PhD 2006), Robyn Levine (PhD 2008), Colin Wallace (PhD 2011).