

## NEAL STEVEN KATZ

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Place and date of birth: Detroit, Michigan, 7 September 1962.

### Education

PRINCETON UNIVERSITY  
Princeton, New Jersey  
1984–1989

PhD in Astrophysics, 1989. Advisor: James E. Gunn  
Thesis: “A Galaxy Formation Cookbook: Recipes and Utensils”

UNIVERSITY OF MICHIGAN  
Ann Arbor, Michigan  
1980–1984

BS (High Honors and High Distinction) in Astronomy, Mathematics, and Physics, 1984.

### Professional Employment

Professor of Astronomy, University of Massachusetts	2005–
Associate Professor of Astronomy, University of Massachusetts	2000–2005
Assistant Professor of Astronomy, University of Massachusetts	1997–2000
Research Assistant Professor of Astronomy, University of Washington	1994–1996
Postdoctoral Fellow, Massachusetts Institute of Technology	1991–1993
Postdoctoral Fellow, University of Arizona	1989–1991

### Fellowships and Honors

ISI Highly Cited Scientist	2004–
Hubble Fellow	1991–1993
Bok Fellow	1989–1991
NATO Postdoctoral Fellowship (declined)	1989
Ray Grimm Memorial Prize in Computational Physics	1988
John von Neumann Fellowship in Supercomputing	1987–88
National Science Foundation Honorable Mention	1985
Princeton University Prize Fellowship	1984–85

### Past and Current Support

N. Katz NASA NAG5-3525: 9/15/96 to 9/14/01 \$298,064, “Quasar Absorption in the UV: Probing the Intergalactic Medium”  
N. Katz NASA NAG5-3922: 4/1/97 to 3/31/00 \$120,000, “The Origin of Quasar Absorption Lines in a Cosmological Context”  
N. Katz NASA NAG5-4064: 4/1/97 to 3/31/00 \$145,434, “A Theoretical Study of Processes Driving the Formation and Evolution of Galaxy Clusters”  
M. Weinberg, N. Katz, and E. Linder NSF DUE-9851012: 6/1/98 to 5/31/00 \$ 67,710, “Computation and Visualization for Astronomy”

N. Katz NSF AST 9802568: 6/1/98 to 5/31/01 \$160,100, “The Cosmic History of Baryons”  
 N. Katz, E. Linder, and M. Weinberg NASA NAG5-7575: 6/1/98 to 5/31/01 \$79,482, “Computing Our Origins”  
 M. Weinberg & N. Katz NSF AST-9988146 9/1/00 to 8/31/03 \$ 302,209 “Mutual Dynamical Evolution of the Galaxy and the Nearby Local Group”  
 M. Weinberg & N. Katz NASA ATP NAG5-12038 10/1/02 to 9/30/05 \$ 170,296 “Evolution and Interaction of Structure in Galaxies”  
 N. Katz & M. Weinberg NSF AST-0205969 8/15/02 to 8/31/05 \$ 302,209 “The Dynamics of Galaxy Formation”  
 N. Katz, D. McIntosh & M. Weinberg NASA LTSA NAG5-13102 7/1/03 to 6/30/08 \$ 616,139 “The Structure of Local Galaxies with 2MASS”  
 N. Katz & M. Weinberg NASA ATP NAGS-13308 7/1/03 to 6/30/06 \$ 106,883 “The Core Problems of Galaxy Formation”  
 N. Katz NASA ATP NNG04GK68G 7/1/04 to 6/30/07 \$176,512 “Delivering the GOODS: interpreting the Great Observatories Origins Deep Survey”  
 M. Weinberg, N. Katz, H. Mo & E. Moss NASA AISR-126270 3/15/06 to 3/14/11 \$714,101 “Enabling Bayesian Inference for the Astronomy Masses”  
 H. Mo & N. Katz NSF AST-0607535 7/15/06 to 7/14/09 \$313,312 “Suppressing Star Formation in Dwarf Galaxies”  
 M. Weinberg, N. Katz, H. Mo & E. Moss NSF SEIII 7/15/06 to 7/14/10 \$771,900 “High-performance Computational Bayesian Inference”  
 M. Weinberg, N. Katz, J. Navarro, & M. Yun NSF ATI 7/01/07 to 6/30/09 \$480,000 “A High-Performance Computational Facility for Extragalactic Research”  
 T. Tripp, N. Katz, & H. Mo NASA ADP NNX08AJ44G 2/28/08 to 2/27/11 \$204,585 “Physical Properties of Gas in the Cosmic Web”  
 M. Weinberg & N. Katz NSF AST 9/1/09 to 8/31/12 \$387,667 “The Dynamics of Galaxy Evolution”  
 H. Mo, N. Katz, & T. Tripp NSF AST 7/15/09 to 7/14/12 \$428,292 “Reconstructing the Cosmic Density Field”  
 N. Katz NASA ATP 06/01/10 to 7/14/13 \$189,871 “Cold Accretion and Galaxy Formation”  
 T. Tripp & N. Katz NASA HST 6/1/10 to 5/31/12 \$229,307  
 T. Tripp & N. Katz NASA HST 10/1/10 to 10/31/12 \$141,818

**Publications–Refereed Journals**( $\approx$ 1500 citations in 2009, > 11000 total, H–index=53)

1. N. Katz and D. O. Richstone 1984. “Orbital Characteristics of Polar Rings of Galaxies,” *A.J.*, **89**, 975.
2. N. Katz and D. O. Richstone 1985. “Mass-to-Light Estimates for Three Round Galaxies Using Schwarzschild’s Method,” *Ap. J.*, **296**, 331.
3. N. Katz, S. Balbus, and B. Paczyński 1986. “Random Scattering Approach to Gravitational Microlensing,” *Ap. J.*, **306**, 2.
4. B. T. Draine and N. Katz 1986. “Magnetohydrodynamic Shocks in Diffuse Clouds I. Chemical Processes,” *Ap. J.*, **306**, 655.
5. B. T. Draine and N. Katz 1986. “Magnetohydrodynamic Shocks in Diffuse Clouds II. Production of  $\text{CH}^+$ , OH, CH, and Other Species,” *Ap. J.*, **310**, 621.
6. N. Katz and B. Paczyński 1987. “Gravitational Lensing by an Ensemble of Isothermal Galaxies,” *Ap. J.*, **317**, 11.
7. L. Hernquist and N. Katz 1989. “TreeSPH: A Unification of SPH with the Hierarchical Tree Method,” *Ap. J. Suppl.*, **70**, 419.

8. J. Wambsganss, B. Paczyński, and N. Katz 1990. “A Microlensing Model for QSO 2237+0305,” *Ap. J.*, **352**, 407.
9. D. E. P. Walsh, J. H. van Gorkom, W. E. Bies, N. Katz, S. Wallington, and G. Knapp 1990. “HI Observations of 3 IRAS Detected Ellipticals,” *Ap. J.*, **352**, 532.
10. N. Katz 1991. “Dissipationless Collapse in an Expanding Universe” *Ap. J.*, **368**, 325.
11. N. Katz and J. E. Gunn 1991. “Dissipational Galaxy Formation I: Effects of Gas Dynamics” *Ap. J.*, **377**, 365.
12. G. Efstathiou, G. Bernstein, N. Katz, J. A. Tyson and P. Guhathakurta, 1991. “The Clustering of Distant Galaxies” *Ap. J. (Letters)*, **380**, L47.
13. N. Katz 1992. “Dissipational Galaxy Formation II: Effects of Star Formation” *Ap. J.*, **391**, 502.
14. N. Katz and H.–W. Rix 1992. “Cooling and the Longevity of Polar Rings” *Ap. J. (Letters)*, **389**, L55.
15. D. M. Christodoulou, N. Katz, H.–W. Rix, and A. Habe 1992. “The Dynamical Evolution of Highly Inclined Rings” *Ap. J.*, **395**, 113.
16. N. Katz 1992. “Aspects of Hierarchical Galaxy Formation Involving Gas Dynamics” *P.A.S.P.*, **104**, 852.
17. N. Katz, L. Hernquist, and D. H. Weinberg 1992. “Galaxies and Gas in a Cold Dark Matter Universe” *Ap. J. (Letters)*, **399**, L109.
18. A. Babul and N. Katz 1993 “Does the Baryon Fraction in Clusters Imply an Open Universe?” *Ap. J. (Letters)*, **406**, L51.
19. N. Katz and S. D. M. White 1993 “Hierarchical Galaxy Formation: Overmerging and the formation of an X–ray cluster” *Ap. J.*, **412**, 455.
20. N. Katz, T. R. Quinn, and J. M. Gelb 1993 “Galaxy Formation and the Peaks Formalism” *M.N.R.A.S.*, **265**, 689.
21. J. C. Tsai, N. Katz and E. Bertschinger 1994 “X-ray Emission from a Simulated Cluster of Galaxies” *Ap. J.*, **423**, 553.
22. N. Katz, T. R. Quinn, E. Bertschinger, and J. M. Gelb 1994 “Formation of Quasars at High Redshift” *M.N.R.A.S.*, **270**, L71.
23. L. Hernquist, N. Katz, and D. H. Weinberg 1995 “Physically Detached ‘Compact’ Groups” *Ap. J.*, **442**, 57.
24. B. Moore, N. Katz, and G. Lake 1996 “On the Destruction and Over–Merging of Dark Halos in Dissipationless Simulations” *Ap. J.*, **457**, 455.
25. L. Hernquist, N. Katz, D. H. Weinberg, and J. Miralda–Escude 1996 “The Lyman-Alpha Forest” in the Cold Dark Matter Model” *Ap. J. (Letters)*, **457**, L51.
26. N. Katz, D. H. Weinberg, L. Hernquist, and J. Miralda–Escude 1996 “Damped Lyman-Alpha and Lyman Limit Absorbers in the Cold Dark Matter Model” *Ap. J. (Letters)*, **457**, L57.
27. B. Moore, N. Katz, G. Lake, A. Dressler, and A. Oemler 1996 “Galaxy Harassment and the Evolution of Clusters of Galaxies” *Nature*, **379**, 613.
28. T. R. Quinn, N. Katz, and G. Efstathiou 1996 “Photoionization and the Formation of Dwarf Galaxies” *M.N.R.A.S.*, **278**, L49.
29. N. Katz, D. H. Weinberg, and L. Hernquist 1996 “Cosmological Simulations with TreeSPH” *Ap. J. Suppl.*, **105**, 19.

30. D. H. Weinberg, L. Hernquist, and N. Katz 1997 “Photoionization, Numerical Resolution, and Galaxy Formation” *Ap. J.*, **477**, 8.
31. R. Davé, L. Hernquist, D. H. Weinberg, and N. Katz 1997 “Voigt-Profile Analysis of the Lyman-alpha Forest in a Cold Dark Matter Universe” *Ap. J.*, **477**, 21.
32. J. P. Gardner, N. Katz, L. Hernquist, and D. H. Weinberg 1997 “The Population of Damped Lyman-alpha and Lyman Limit Systems in the Cold Dark Matter Model” *Ap. J.*, **484**, 31.
33. C.-P. Ma, E. Bertschinger, L. Hernquist, D. H. Weinberg, and N. Katz 1997 “Cosmological Constraints from High-Redshift Damped Lyman-Alpha Systems” *Ap. J. (Letters)*, **484**, L1.
34. J. P. Gardner, N. Katz, D. H. Weinberg, and L. Hernquist 1997 “Testing Cosmological Models Against the Abundance of Damped Lyman-Alpha Absorbers” *Ap. J.*, **486**, 42.
35. U. Hellsten, R. Davé, L. Hernquist, D. H. Weinberg, and N. Katz 1997 “Metal Lines Associated with Lyman Alpha Absorbers: A Comparison of Theory and Observations” *Ap. J.*, **487**, 482.
36. R. A. C. Croft, D. H. Weinberg, N. Katz, and L. Hernquist 1997 “Intergalactic Helium Absorption in Cold Dark Matter Models” *Ap. J.*, **488**, 532.
37. M. Rauch, J. Miralda-Escude, W. L. W. Sargent, T. A. Barlow, D. H. Weinberg, L. Hernquist, N. Katz, R. Cen, and J. P. Ostriker 1997 “The Opacity of the Lyman Alpha Forest and Implications for  $\Omega_{baryon}$  and the Ionizing Background” *Ap. J.*, **489**, 7.
38. D. H. Weinberg, J. Miralda-Escude, L. Hernquist, and N. Katz 1997 “A Lower Bound on the Cosmic Baryon Density” *Ap. J.*, **490**, 564.
39. G. Lake, N. Katz, and B. Moore 1998 “The Formation of Quasars in Low Luminosity Hosts via Galaxy Harassment” *Ap. J. (Letters)*, **495**, L152.
40. B. Moore, G. Lake, and N. Katz 1998 “Morphological Transformation from Galaxy Harassment” *Ap. J.*, **495**, 139.
41. R. A. C. Croft, D. H. Weinberg, N. Katz, and L. Hernquist 1998 “Recovery of the Power Spectrum of Mass Fluctuations from Observations of the Lyman-alpha Forest ” *Ap. J.*, **495**, 44.
42. U. Hellsten, R. Davé, L. Hernquist, N. Katz, and D.H. Weinberg 1998 “The Observability of Metal Lines Associated with the Lyman-alpha Forest” *Ap. J.*, **499**, 172.
43. J. M. Owen, D. H. Weinberg, A. E. Evrard, L. Hernquist, and N. Katz 1998 “Cosmological Simulations with Scale-Free Initial Conditions I: Adiabatic Hydrodynamics” *Ap. J.*, **503**, 16.
44. R. Davé, U. Hellsten, L. Hernquist, N. Katz, and D.H. Weinberg 1998 “Constraining the Metallicity of the Low Density Lyman-alpha Forest Using OVI Absorption” *Ap. J.*, **509**, 661.
45. R. Davé, L. Hernquist, N. Katz, and D.H. Weinberg 1999 “The Low Redshift Lyman Alpha Forest in Cold Dark Matter Cosmologies” *Ap. J.*, **511**, 521.
46. R.A.C. Croft, D.H. Weinberg, M. Pettini, L. Hernquist, and N. Katz 1999 “The Power Spectrum of Mass Fluctuations Measured from the Lyman-alpha Forest at Redshift  $z=2.5$ ” *Ap. J.*, **520**, 1.
47. F. Governato, A. Babul, T. Quinn, P. Tozzi, C.M. Baugh, N. Katz, and G. Lake 1999 “Properties of Galaxy Clusters: Mass and Correlation Functions” *M.N.R.A.S.*, **307**, 949.
48. D.H. Weinberg, R.A.C. Croft, L. Hernquist, N. Katz, and M. Pettini 1999 “Closing in on  $\Omega_0$ : The Amplitude of Mass Fluctuations from Galaxy Clusters and the Lyman-alpha Forest” *Ap. J.*, **522**, 563.
49. N. Katz, L. Hernquist, and D.H. Weinberg 1999 “The Clustering of High Redshift Galaxies in the Cold Dark Matter Scenario” *Ap. J.*, **523**, 463.
50. R.A.C. Croft, R. Davé, L. Hernquist, and N. Katz 2000 “Simulating the effects of intergalactic grey dust” *Ap. J. (Letters)*, **534**, L123.

51. G. F. Lewis, A. Babul, N. Katz, T. Quinn, L. Hernquist, and D. H. Weinberg 2000 “The Effects of Gas Dynamics, Cooling, Star Formation, and Numerical Resolution in Simulations of Cluster Formation” *Ap. J.*, **536**, 623.
52. R. Davé, R. Cen, J. P. Ostriker, G. L. Bryan, L. Hernquist, N. Katz, D. H. Weinberg, M. L. Norman, & B. O’Shea 2001 “Baryons in the Warm-Hot Intergalactic Medium” *Ap. J.*, **552**, 473.
53. A. Aguirre, L. Hernquist, N. Katz, J.P. Gardner, & D.H. Weinberg 2001 “Enrichment of the Intergalactic Medium by Radiation Pressure Driven Dust Efflux” *Ap. J. (Letters)*, **556**, L11.
54. R. A. C. Croft, T. Di Matteo, R. Davé, L. Hernquist, N. Katz, M. A. Fardal, D. H. Weinberg 2001 “Hydrodynamic Simulation of the Cosmological X-ray Background” *Ap. J.*, **557**, 67.
55. J. P. Gardner, N. Katz, L. Hernquist, and D. H. Weinberg 2001 “Simulations of Damped Lyman-Alpha and Lyman Limit Absorbers in Different Cosmologies: Implications for Structure Formation at High Redshift” *Ap. J.*, **559**, 131.
56. J. Phillips, D.H. Weinberg, R.A.C. Croft, L. Hernquist, N. Katz, and M. Pettini 2001 “Constraints on Cosmological Parameters from the Ly $\alpha$  Forest Power Spectrum and COBE-DMR” *Ap. J.*, **560**, 15.
57. A. Aguirre, L. Hernquist, D.H. Weinberg, N. Katz, & J.P. Gardner 2001 “Metal Enrichment of the Intergalactic Medium at  $z=3$  by Galactic Winds” *Ap. J.*, **560**, 599.
58. A. Aguirre, L. Hernquist, J. Shaye, N. Katz, D.H. Weinberg, & J.P. Gardner 2001 “Metal Enrichment of the Intergalactic Medium in Cosmological Simulations” *Ap. J.*, **561**, 512.
59. M. A. Fardal, N. Katz, J. P. Gardner, L. Hernquist, D. H. Weinberg, & R. Davé 2001 “Cooling Radiation and the Lyman-alpha Luminosity of Forming Galaxies” *Ap. J.*, **562**, 605.
60. C. E. Petry, C. D. Impey, N. Katz, D. H. Weinberg, & L. Hernquist 2002 “Comparing Simulations and Observations of the Lyman- $\alpha$  Forest I. Methodology” *Ap. J.*, **566**, 30.
61. D.H. Weinberg, L. Hernquist, N. Katz 2002 “High-Redshift Galaxies in Cold Dark Matter Models” *Ap. J.*, **571**, 15.
62. C. Murali, N. Katz, L. Hernquist, & R. Davé 2002 “The growth of galaxies in cosmological simulations of structure formation” *Ap. J.*, **571**, 1.
63. R. Davé, N. Katz, & D. H. Weinberg 2002 “X-Ray Scaling Relations of Galaxy Groups in a Hydrodynamic Cosmological Simulation” *Ap. J.*, **579**, 23.
64. M.D. Weinberg & N. Katz 2002 “Bar-driven dark halo evolution: a resolution of the cusp–core controversy” *Ap. J.*, **580**, 627.
65. R.A.C. Croft, D.H. Weinberg, M. Bolte, S. Burles, L. Hernquist, N. Katz, D. Kirkman, & D. Tytler 2002 “Towards a Precise Measurement of Matter Clustering: Lyman-alpha Forest Data at Redshifts 2-4” *Ap. J.*, **581**, 20.
- 66.\* E.F. Bell, D.H. McIntosh, N. Katz, & M. Weinberg 2003 “A First Estimate of the Baryonic Mass Function of Galaxies” *Ap. J. (Letters)*, **585**, 117L.
67. J.P Gardner, N. Katz, L. Hernquist, & D. H. Weinberg 2003 “The Influence of Omega baryon on High-Redshift Structure” *Ap. J.*, **587**, 1.
68. I.G. McCarthy, A. Babul, N. Katz, & M.L. Balogh 2003 “On the Relationship between Cooling Flows and Bubbles” *Ap. J. (Letters)*, **587**, 75L.
69. A.A. Berlind, D. H. Weinberg, A.J. Benson, C.M. Baugh, S. Cole, R. Davé, C.S. Frenk, A. Jenkins, N. Katz, & C.G. Lacey 2003 “The Halo Occupation Distribution and the Physics of Galaxy Formation” *Ap. J.*, **593**, 1.
70. X. Chen, D. H. Weinberg, N. Katz, & R. Davé 2003 “X-ray Absorption by the Low-redshift Intergalactic Medium: A Numerical Study of the Lambda CDM model” *Ap. J.*, **594**, 42.

71. J. A. Kollmeier, D. H. Weinberg, R. Davé, & N. Katz 2003 “Lyman Break Galaxies and the Lyman-alpha Forest” *Ap. J.*, **594**, 75.
- 72.\* A.H. Maller, D.H. McIntosh, N. Katz, & M. Weinberg 2003 “The Clustering Dipole of the Local Universe from the 2MASS Extended Source Catalogue” *Ap. J.*, **598**, 1.
- 73.\* E.F. Bell, D.H. McIntosh, N. Katz, & M. Weinberg 2003 “The Optical and Near-Infrared Properties of Galaxies: I. Luminosity and Stellar Mass Functions” *Ap. J. Suppl.*, **149**, 289.
74. D. H. Weinberg, R. Davé, N. Katz & L. Hernquist 2004 “Galaxy Clustering and Galaxy Bias in a Lambda-CDM Universe” *Ap. J.*, **601**, 1.
- 75.\* A.H. Maller, D.H. McIntosh, N. Katz, & M. Weinberg 2005 “The Galaxy Angular Correlation Function and Power Spectrum from the Two Micron All Sky Survey” *Ap. J.*, **619**, 147.
76. T. Fang, R. A. C. Croft, W. T. Sanders, J. Houck, R. Davé, N. Katz, D. H. Weinberg, & L. Hernquist 2005 “Simulation of Soft X-ray Emission Lines from the Missing Baryons” *Ap. J.*, **623**, 612.
- 77.\*\* N. Bouche, J. P. Gardner, N. Katz, D. H. Weinberg, R. Davé, & J.D. Lowenthal 2005 “Measuring the Halo Mass of  $z \sim 3$  Damped Ly-alpha Absorbers from the Absorber-Galaxy Cross-correlation” *Ap. J.*, **628**, 89.
78. A. A. Berlind, M. R. Blanton, D. W. Hogg, D. H. Weinberg, R. Davé, D. J. Eisenstein, & N. Katz 2005 “Interpreting the Relationship Between Galaxy Luminosity, Color and Environment” *Ap. J.*, **629**, 625.
- 79.\*\* D. Keres, N. Katz, D. H. Weinberg, & R. Davé 2005 “How Do Galaxies Get Their Gas?” *M.N.R.A.S.*, **363**, 2.
- 80.\* K. Holley-Bockelmann, M.D. Weinberg & N. Katz 2005 “Bar Induced Disruption of Dark Matter Cusps” *M.N.R.A.S.*, **363**, 991.
81. H. Zhan, R. Davé, D. Eisenstein, & N. Katz 2005 “Ly $\alpha$  Flux Power Spectrum and Its Covariance” *M.N.R.A.S.*, **363**, 1145.
- 82.\* H.J. Mo, X. Yang, F.C. van den Bosch, N. Katz 2005 “Pre-heating by pre-virialization and its impact on galaxy formation” *M.N.R.A.S.*, **363**, 1155.
83. Z. Zheng, A. A. Berlind, D. H. Weinberg, A. J. Benson, C. M. Baugh, S. Cole, R. Davé, C. S. Frenk, N. Katz, C. G. Lacey 2005 “Theoretical Models of the Halo Occupation Distribution: Separating Central and Satellite Galaxies” *Ap. J.*, **633**, 791.
84. Y. Yang, A.I. Zabludoff, R. Davé, D.J. Eisenstein, P.A. Pinto, N. Katz, D.H. Weinberg 2006 “Probing Galaxy Formation with He II Cooling Lines” *Ap. J.*, **640**, 539.
- 85.\*\* Y. Lu, H.J. Mo, N. Katz, & M. D. Weinberg 2006 “On the origin of cold dark matter halo density profiles” *M.N.R.A.S.*, **368**, 1931.
- 86.\* A. Maller, N. Katz, D. Keres, R. Davé, & D. H. Weinberg 2006 “Galaxy Merger Statistics and Inferred Bulge-to-Disk Ratios in Cosmological SPH Simulations” *Ap. J.*, **647**, 763.
87. J. Yoo, J.L. Tinker, D.H. Weinberg, Z. Zheng, N. Katz, & R. Davé 2006 “From Galaxy-Galaxy Lensing to Cosmological Parameters” *M.N.R.A.S.*, **652**, 26.
88. S. Ravindranath, M. Giavalisco, H.C. Ferguson, C. Conselice, N. Katz, M. Weinberg, J. Lotz, M. Dickinson, S.M. Fall, B. Mobasher, C. Papovich 2006 “The Morphological Diversities Among Star-forming Galaxies at High Redshifts in the Great Observatories Origins Deep Survey (GOODS)” *Ap. J.*, **652**, 963.
89. G. Stinson, A. Seth, N. Katz, J. Wadsley, F. Governato, & T. Quinn 2006 “Star Formation and Feedback in Smoothed Particle Hydrodynamic Simulations–I. Isolated Galaxies” *M.N.R.A.S.*, **373**, 1074.

- 90.\* D.H. McIntosh, E.F. Bell, N.Katz, & M.D. Weinberg 2006 “Nature and Completeness of Galaxies Detected in the Two Micron All Sky Survey” *M.N.R.A.S.*, **373**, 1321.
91. M.D. Weinberg & N. Katz 2007 “The Bar–Halo Interaction–I. From Fundamental Dynamics to Revised N-body Requirements” *M.N.R.A.S.*, **375**, 425.
92. M.D. Weinberg & N. Katz 2007 “The Bar–Halo Interaction–II. Secular evolution and the religion of N-body simulations” *M.N.R.A.S.*, **375**, 460.
- 93.\*\* A. Cattaneo, J. Blaizot, D.H. Weinberg, S. Colombi, R. Davé, J. Devriendt, B. Guiderdoni, N. Katz, & D. Keres 2007 “Accretion, feedback and galaxy bimodality: a comparison of the GALICS semi-analytic model and cosmological SPH simulations” *M.N.R.A.S.*, **377**, 63.
- 94.\* M.A. Fardal, N. Katz, D.H. Weinberg, & R. Davé 2007 “On the Evolutionary History of Stars and their Fossil Mass and Light” *M.N.R.A.S.*, **379**, 985.
- 95.\*\* J.-H. Choi, M.D. Weinberg, & N. Katz 2007 “The dynamics of tidal tails from massive satellites” *M.N.R.A.S.*, **381**, 987.
96. D.H. Weinberg, S. Colombi, R. Davé, & N. Katz 2008 “Baryon Dynamics, Dark Matter Substructure, and Galaxies” *Ap. J.*, **678**, 6.
- 97.\* D.H. McIntosh, Y. Guo, J. Hertzberg, N. Katz, H.J. Mo, F.C. van den Bosch, & X. Yang 2008 “Ongoing assembly of massive galaxies by major merging in large groups and clusters from the SDSS” *M.N.R.A.S.*, **388**, 1537.
98. Y. Wang, X. Yang, H.J. Mo, F.C. van den Bosch, N. Katz, A. Pasquali, D.H. McIntosh, & S. Weinmann 2009 “The Nature of Red Dwarf Galaxies” *Ap. J.*, **697**, 247.
- 99.\*\* D. Keres, N. Katz, M. Fardal, R. Davé, & D. H. Weinberg 2009 “Galaxies in a simulated CDM Universe - I. Cold mode and hot cores” *M.N.R.A.S.*, **395**, 160.
- 100.\*\* D. Keres, N. Katz, R. Davé, M. Fardal, & D. H. Weinberg 2009 “Galaxies in a simulated CDM universe - II. Observable properties and constraints on feedback” *M.N.R.A.S.*, **396**, 2332.
- 101.\*\* Y. Guo, D.H. McIntosh, H.J. Mo, N. Katz, F.C. van den Bosch, M. Weinberg, S.M. Weinmann, A. Pasquali, & X. Yang 2009 “Structural properties of central galaxies in groups and clusters” *M.N.R.A.S.*, **398**, 1129.
- 102.\*\* V. Simha, D.H. Weinberg, R. Davé, D. H. Weinberg, R. Davé, O.Y. Gnedin, N. Katz, & D. Keres 2009 “The growth of central and satellite galaxies in cosmological smoothed particle hydrodynamics simulations” *M.N.R.A.S.*, **399**, 650.
- 103.\*\* J.-H. Choi, M.D. Weinberg, & N. Katz 2009 “The dynamics of satellite disruption in cold dark matter haloes” *M.N.R.A.S.*, **399**, 650.
104. J.A. Kollmeier, Z. Zheng, R. Davé, A. Gould, N. Katz, J. Miralda-Escude, & D. H. Weinberg 2010 “Lyman-alpha Emission From Cosmic Structure I: Fluorescence” *Ap. J.*, **708**, 1048.
- 105.\* M.S. Peebles, D.H. Weinberg, R. Davé, M.A. Fardal, & N. Katz 2009 “Pressure Support vs. Thermal Broadening in the Lyman-alpha Forest I: Effects of the Equation of State on Longitudinal Structure” *M.N.R.A.S.*, **404**, 1281.
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- 107.\* R. Davé, K. Finlator, B.D. Oppenheimer, M.A. Fardal, N. Katz, D. Keres, & D.H. Weinberg 2010 “The nature of submillimetre galaxies in cosmological hydrodynamic simulations” *M.N.R.A.S.*, **404**, 1355.

- 108.\* B.D. Oppenheimer, R. Davé, D. Keres, M.A. Fardal, N. Katz, J.A. Kollmeier, & D.H. Weinberg 2010 “Feedback and recycled wind accretion: assembling the  $z = 0$  galaxy mass function” *M.N.R.A.S.*, **406**, 2325.
109. R. Davé, B.D. Oppenheimer, N. Katz, J.A. Kollmeier, & D.H. Weinberg 2010 “The intergalactic medium over the last 10 billion years - I. Ly $\alpha$  absorption and physical conditions” *accepted*
- 110.\*\* Y. Lu, H.J. Mo, M.D. Weinberg, & N. Katz 2010 “A Bayesian approach to the semi-analytic model of galaxy formation: methodology” *submitted*
- 111.\* Y. Zu, D.H. Weinberg, R. Davé, M.A. Fardal, N. Katz, D. Keres, & B.D. Oppenheimer 2010 “Intergalactic Dust Extinction in Hydrodynamic Cosmological Simulations” *submitted*
- 112.\*\* Y. Lu, D. Keres, N. Katz, H.J. Mo, M.A. Fardal, & M.D. Weinberg 2010 “On the algorithms of radiative cooling in semi-analytic models” *submitted*
- 113.\*\* S. Hong, N. Katz, R. Davé, M.A. Fardal, D. Keres, & B.D. Oppenheimer 2010 “Galactic outflows and the kinematics of damped Lyman alpha absorbers” *submitted*
- 114.\*\* I. Yoon, M.D. Weinberg, & N. Katz 2010 “New insights on galaxy structure from GALPHAT: Motivation, methodology, and benchmarks for Sersic models” *submitted*

### Publications–Conference Proceedings

1. N. Katz and L. Hernquist 1988. “Experiments in Galaxy Formation,” *Bull. Am. Astron. Soc.* **20**, 718 (*abstract*).
2. N. Katz, and L. Hernquist 1988. “Dissipational Galaxy Formation,” in *NATO ASI Series*, Vol. **264**: “The Epoch of Galaxy Formation” p. 433 (Kluwer Academic, Dordrecht, Eds: C.S. Frenk, R.S. Ellis, T. Shanks, A.F. Heavens, and J.A. Peacock).
3. J. Wambsganss, B. Paczyński, and N. Katz 1989. “Brightness Variations of QSO 2237+0305 Expected from a Gravitational Microlensing Model,” in *Lecture Notes in Physics*, Vol. **330**: “Gravitational Lenses” p. 209 (Springer–Verlag, Berlin, Eds: J.M. Moran, J.N. Hewitt, and K.Y. Lo).
4. N. Katz 1989. “Galaxy Formation Including Gas Dynamics,” *Bull. Am. Astron. Soc.* **20**, 975 (*abstract*).
5. S. Wallington, N. Katz, J. E. Gunn, G. Knapp, and J.H. van Gorkom 1989. “Observations of NGC 855,” *Bull. Am. Astron. Soc.* **20**, 1038 (*abstract*).
6. H. W. Rix and N. Katz 1991. “Formation of Polar Rings,” in “Warped Disks and Inclined Rings Around Galaxies” p. 73 (Cambridge University Press, New York, Eds: S. Casertano, P. Sackett, & F. Briggs).
7. G. Bernstein, J. A. Tyson, G. Efstathiou, N. Katz, and P. Guhathakurta 1991. “Angular Correlations of Faint Galaxies” *Bull. Am. Astron. Soc.* **23**, 897 (*abstract*).
8. P. Guhathakurta, G. Efstathiou, G. Bernstein, J. A. Tyson, and N. Katz 1991. “Clustering of Faint Galaxies”, in “Clusters & Superclusters of Galaxies” p. 119 (NATO ASI, Cambridge, UK, Eds: M. M. Colless, A. Babul, A. C. Edge, R. M. Johnstone, and S. Raychaudhury).
9. J. C. Tsai, N. Katz, and E. Bertschinger 1992. “X–ray Emission from a Simulated Cluster of Galaxies,” *Bull. Am. Astron. Soc.* **24**, 1290 (*abstract*).
10. G. Lake, N. Katz, T. R. Quinn, J. Stadel 1995. “Cosmological N–Body Simulation”, in “Proceedings of the Seventh SIAM Conference on Parallel Processing for Scientific Computing” p. 307 (SIAM, Philadelphia, USA, Eds: D.H. Bailey *et al*).
11. D. H. Weinberg, N. Katz, L. Hernquist, and J. Miralda-Escudé 1996. “Small Scale Structure and High Redshift HI”, in “Cold Gas at High Redshift” (Kluwer Academic, Dordrecht, Eds: M. Bremer, H. Rottgering, C. Carilli, and P. van de Werf).

12. D. R. Ingram, N. Katz, D. H. Weinberg, and L. Hernquist 1996. "SPH Simulations of the Early Universe: Performance of the Dwingeloo Square Kilometer Array", in "Cold Gas at High Redshift" (Kluwer Academic, Dordrecht, Eds: M. Bremer, H. Rottgering, C. Carilli, and P. van de Werf).
13. R. Davé, L. Hernquist, D. H. Weinberg, and N. Katz 1997 "Analysis of the Lyman-alpha Forest in Cosmological Simulations Using Voigt-Profile Decomposition" in "Proceedings of the IAGUSP Workshop on Young Galaxies and QSO Absorbers"
14. R. A. C. Croft, D. H. Weinberg, L. Hernquist, and N. Katz 1997 "Characterization of Lyman Alpha Spectra and Predictions of Structure Formation Models: A Flux Statistics Approach" in "proceedings of the 18th Texas Symposium on Relativistic Astrophysics" (eds. A. Olinto, J. Frieman and D. Schramm, World Scientific)
15. D. H. Weinberg, N. Katz, and L. Hernquist 1997 "Simulating Cosmic Structure Formation" in "Origins" (eds. M. Shull, C. E. Woodward, & H. Thronson, ASP Conference Series)
16. D. H. Weinberg, L. Hernquist, N. Katz, R. Croft, and J. Miralda-Escudé 1997 "Hubble Flow Broadening of the Lyman-alpha Forest and its Implications" in "proceedings of the 13th IAP Colloquium, Structure and Evolution of the IGM from QSO Absorption Line Systems" (eds. P. Petitjean & S. Charlot, Nouvelles Frontières, Paris)
17. U. Hellsten, L. Hernquist, N. Katz, and D. H. Weinberg 1997 "Metal Lines in Cosmological Models of Lyman-Alpha Absorbers" in "proceedings of the 13th IAP Colloquium, Structure and Evolution of the IGM from QSO Absorption Line Systems" (eds. P. Petitjean & S. Charlot, Nouvelles Frontières, Paris)
18. J. Miralda-Escudé, M. Rauch, W. L. W. Sargent, T. A. Barlow, D. H. Weinberg, L. Hernquist, N. Katz, R. Cen, J. P. Ostriker 1997 "New Statistical Measures of the Ly $\alpha$  Forest Spectra for Accurate Comparison to Theoretical Models" in "proceedings of the 13th IAP Colloquium, Structure and Evolution of the IGM from QSO Absorption Line Systems" (eds. P. Petitjean & S. Charlot, Nouvelles Frontières, Paris)
19. R. A. C. Croft, D. H. Weinberg, N. Katz, and L. Hernquist 1998 "Cosmology from the structure of the Lyman-alpha forest" in "Large-Scale Structure: Tracks and Traces", proceedings of the 12th Potsdam Cosmology Workshop" (eds. V. Muller et al., World Scientific)
20. N. Katz, L. Hernquist, and D. H. Weinberg 1998 "Simulating Gas at High Redshift" in proceedings of "Highly Redshifted Radio Lines"
21. D. H. Weinberg, S. Burles, R. A. C. Croft, R. Davé, G. Gomez, L. Hernquist, N. Katz, D. Kirkman, S. Liu, J. Miralda-Escudé, M. Pettini, J. Phillips, D. Tytler, J. Wright 1998 "Cosmology with the Lyman-alpha Forest" in "Proceedings of the MPA/ESO Conference "Evolution of Large Scale Structure: From Recombination to Garching"
22. D. H. Weinberg, R. Davé, J.P. Gardner, L. Hernquist, & N. Katz 1999 "Theoretical Modeling of the High Redshift Galaxy Population" in "Photometric Redshifts and High Redshift Galaxies" (eds. R. Weymann, L. Storrie-Lombardi, M. Sawicki & R. Brunner, San Francisco: ASP Conference Series)
23. R. Davé, L. Hernquist, N. Katz, & D. H. Weinberg 2000 "Evolution of Clustering and Bias in a Lambda-CDM Universe" in "Proceedings of Rencontres Internationales de l'IGRAP, Clustering at High Redshift"
24. R. Davé, J.P. Gardner, L. Hernquist, N. Katz, & D. H. Weinberg 2000 "The Nature of Lyman Break Galaxies in Cosmological Hydrodynamic Simulations" in "Proceedings of Rencontres Internationales de l'IGRAP, Clustering at High Redshift"

25. J.P. Gardner, N. Katz, D. H. Weinberg, & L. Hernquist 2001 “Numerical Constraints on the Nature of High-Redshift Damped Lyman Alpha Systems” in “Proceedings of the ESO/ECF/STScI Workshop” (eds. S. Cristiani, A. Renzini & R. E. Williams, Springer)
26. N. Katz, D. Keres, R. Davé, & D. H. Weinberg 2003 “How Do Galaxies Get Their Gas?” in “Proceedings of the IGM/Galaxy Connection-The Distribution of Baryons at  $z=0$ ” (eds. J. L. Rosenberg and M. E. Putman)
27. R. Davé, N. Katz, & D. H. Weinberg 2003 “Lyman Alpha Absorber Correlations and the Bias of the Lyman Alpha Forest” in “Proceedings of the IGM/Galaxy Connection-The Distribution of Baryons at  $z=0$ ” (eds. J. L. Rosenberg and M. E. Putman)
28. D. H. Weinberg, R. Davé, & N. Katz 2003 “The Lyman-alpha Forest as a Cosmological Tool” in “Proceedings of the 13th Annual Astrophysics Conference in Maryland” (eds. S. Holt and C. Reynolds, AIP Press)
29. J.A. Kollmeier, D. H. Weinberg, R. Davé, & N. Katz 2003 “The Lyman-alpha Forest as a Cosmological Tool” in “Proceedings of the 13th Annual Astrophysics Conference in Maryland” (eds. S. Holt and C. Reynolds, AIP Press)
30. R. Davé, K. Finlator, L. Hernquist, N.Katz, D. Keres, C. Popovich, & D.H. Weinberg 2005 “Building Galaxies with Simulations” in proceedings of “The Fabulous Destiny of Galaxies: Bridging Past and Present”, Marseille
31. A.H. Maller, D.H. McIntosh, N. Katz, & M.D. Weinberg 2005 “Large Scale Structure in the Two Micron All Sky Survey” in proceedings of “Multiwavelength mapping of galaxy formation and evolution” (eds. A. Renzini and R. Bender, Garching)
32. H.J. Mo, X. Yang, F.C. van den Bosch, & N. Katz 2005 “Cold gas in dark matter halos and the formation of late-type galaxies” in proceedings of “Probing Galaxies through Quasar Absorption Lines” (eds. P.R. Williams, C.-G. Shu and B. Menard, Cambridge University Press)
33. I. Yoon, M.D. Weinberg, & N. Katz 2009 “Beyond the best-fit parameter: new insight on galaxy structure decomposition from GALPHAT” in the proceedings of “Galaxy Evolution: Emerging Insights and Future Challenges” (eds. S. Jogee, L. Hao, G. Blanc, I. Marinova, ASP Conference Series)

## Experience

### TEACHING

- Have taught a general introductory astronomy course (Astro 100) several times, an introductory course for science majors, Stars and Galaxies (Astro 114), a graduate cosmology course (Astro 748) several times, a graduate dynamics course (Astro 645) and a graduate literature review course (Astro 792).
- Proposed for, organized, and ran a summer school called “Computing Our Universe” for upper level undergrads and 1st year grads in 1998 and 1999.
- Cowrote the proposal for and helping to organize a campus wide center for computational science at the University of Massachusetts.

### TALKS

- “The Epoch of Galaxy Formation” conference at Durham University, July 1988.
- Princeton University, May 1989.
- “Galaxy Formation” conference at Taos, January 1990.
- University of Arizona, February 1990.
- “Warped Disks and Inclined Rings Around Galaxies” conference, June 1990.
- Oxford University, July 1990.

- “Galaxies at High Redshift” conference at Oxford University, July 1990.
- University of Washington, October 1990.
- University of California at Santa Cruz, November 1990.
- Massachusetts Institute of Technology, November 1990.
- University of California at San Diego, February 1991.
- “Hubble Symposium” at StScI, October 1991.
- Massachusetts Institute of Technology, November 1991.
- University of California at Berkeley, November 1991.
- University of California at Santa Cruz, November 1991.
- University of Michigan, March 1992.
- Columbia University, September 1992.
- Oxford University, October 1992.
- University of Virginia, December 1992.
- Stanford University, March 1993.
- Institute for Advanced Study, March 1993.
- Conference on Elliptical Galaxy Formation at the Acadamei de Lincei, Rome, May 1993.
- University of Washington, March 1994.
- Gravitational Clustering in Cosmology workshop at Aspen Center for Physics, June 1994
- Aspen Center for Physics winter meeting, January 1995
- University of Pennsylvania, February 1995
- University of Maryland, March 1995
- Rutgers University, March 1995
- University of California at San Diego, March 1995
- University of California at Santa Barbara, April 1995
- Conference on “Galaxy Formation and the Intergalactic Medium” at the University of California at Santa Barbara, June 1995
- Harvard University, December 1995
- University of British Columbia, February 1996
- University of Massachusetts, February 1996
- University of Arizona, March 1996
- New York University, April 1996
- California Institute of Technology, May 1996
- Conference on “Galaxy Halos” at the University of California at Santa Cruz, August 1997
- Conference on “Redshifted Radio Lines” at Greenbank Radio Observatory, October 1997
- Aspen Winter Meeting, January 1998
- University of California at Santa Cruz, December 1998
- University of California at Santa Cruz, January 1999
- “Gunnfest” conference at Princeton University, June 1999
- The National Academy of Sciences Second Annual Chinese-American Frontiers of Science Symposium in Beijing China, August 1999
- Conference on “Cosmic Evolution and Galaxy Formation” in Puebla, Mexico, November 1999
- University of Hawaii, February, 2000
- Conference on “Gas and Galaxy Evolution” at the VLA, May 2000
- Conference on “Large Millimeter Surveys” at the University of Massachusetts, June 2000
- Conference on “Computational Cosmology” at the University of Victoria, August 2000
- Aspen Center for Physics winter meeting, January 2001
- Conference on “A New Era of Cosmology” at Durham University, September, 2001
- Conference on “Elliptical Galaxies” at Ringberg Castle, November, 2001
- Conference on “Galaxy Evolution: Theory and Observations” in Cozumel, Mexico, April, 2002

- Conference on “Dark Matter on Small Scales” at the University of Chicago, July, 2002
- Conference on “The IGM/Galaxy Connection: The Distribution of Baryons at  $z=0$ ” at the University of Colorado, August, 2002
- University of Zurich, December, 2002
- MPA, Heidelberg, Germany, April 2003
- Conference on “Galaxy Formation Workshop” at Hebrew University in Jerusalem, Israel, June 2003
- IUCCA, Pune, India, December 2003
- Mt. Stromlo Observatory, Canberra, Australia, March 2004
- Conference summary for “Galaxy-Intergalactic Medium Interactions”, KITP, Santa Barbara, October 2005
- Conference on “Dynamics of Galaxies: Baryons and Dark Matter”, Las Vegas, March 2005
- Ohio State University, Columbus, Ohio, March 2005
- Conference on “Galaxies in the Cosmic Web”, Las Cruces, May 2006
- Conference on “The Role of Black Holes in Galaxy Formation and Evolution”, Potsdam, Germany, September 2006
- University of Arizona, Tucson, Arizona, November 2006
- Conference on “A New Zeal for Old Galaxies”, Rotorua, New Zealand, March 2007
- Conference on “Galaxy growth in a dark Universe”, Heidelberg, Germany, July 2007
- Conference on “Next Generation of Computational Models of Baryonic Physics in Galaxy Formation: From Protostellar cores to Disk Galaxies”, Zurich, Switzerland, September 2007
- Conference on “First Workshop of the Canadian Cluster Comparison Project”, Waimea, Hawaii, December 2007
- Conference on “The Jerusalem Workshop on Galaxy Evolution”, Jerusalem, Israel, June 2008
- Conference on “AGN: The interplay between SuperMassive Black Holes, Star Formation and Galaxy Evolution”, Aspen, Colorado, July 2008
- Conference on “Open Problems in Galaxy Formation”, Potsdam, Germany, May 2009
- South African Observatory, Cape Town, South Africa, June 2009
- Conference on “Hunting for the Dark”, Malta, October 2009
- University College London, London, England, March 2010
- University of Cape Town, Cape Town, South Africa, September 2010

#### OBSERVATIONS

VLA: spectral line (HI) and continuum.

7-meter Bell Labs telescope at Holmdel, NJ: spectral line (CS).

48-inch at Lowell Observatory: multiband CCD photometry.

90-inch at Steward Observatory: B and C spectrograph

10-meter at Keck: LRIS spectrograph