

Curriculum Vita

Nima Arkani-Hamed

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Citizenship: USA and Canada, D.O.B. April 5, 1972

Education

Ph.D., Physics	U.C. Berkeley	1997
B.Sc., Mathematics and Physics	University of Toronto	1993

Academic Positions

Gopal Prasad Professor	Institute for Advanced Study	2008-
Professor of Physics	Harvard University	2002 - 2007
Visiting Professor of Physics	Harvard University	2001 - 2002
Associate Professor of Physics	U.C. Berkeley	2001
Assistant Professor of Physics	U.C. Berkeley	1999 - 2001
Postdoctoral Fellow	SLAC	1997 - 1999

Awards and Honors

Frontiers of Science Award	International Congress of Basic Science	2024
J.J. Sakurai Prize	American Physical Society	2022
Member	National Academy of Sciences	2017
AD White Prof. at Large	Cornell University	2013 - 2019
Fundamental Physics Prize	Breakthrough Prize Foundation	2012
Messenger Lectures	Cornell University	2010
Member	AAAS	2009
Sackler Prize	Tel Aviv University	2008
Phi Beta Kappa teaching award	Harvard University	2005
Gribov Medal	European Physical Society	2003
Packard Fellowship	U.C. Berkeley	2000 - 2005
Sloan Fellowship	U.C. Berkeley	2000 - 2002

Graduate Students Supervised**Current Position****Graduated**

Jeffrey Backus	Graduate Student, Princeton University	n/a
Rahul Balaji	Graduate Student, Princeton University	n/a
Carolina Figueiredo	Graduate Student, Princeton University	n/a
Daniel Longenecker	Graduate Student, Princeton University	n/a
Weiming Zhao	Graduate Student, Princeton University	n/a
Aaron Hillman	Post-doc Research Associate, Caltech	2023
Brad Bachu	Research Scientist, Uniswap Labs	2023
Akshay Yelleshpur	Post-doc Research Associate, Oxford University	2020
Yuntao Bai	Technical Staff, Anthropic	2018
Laurentiu Rodina	Assistant Professor, BIMSA	2017
David McGady	Data Scientist, Handelsbanken	2015
Jaroslav Trnka	Professor, UC-Davis	2013
Jacob Bourjaily	Assoc. Prof. of Physics, Penn State Univ.	2011
Josh Ruderman	Associate Professor, NYU	2011
Matt Baumgart	Assistant Professor, Arizona State Univ.	2009
Clifford Cheung	Professor, Caltech	2009
Jared Kaplan	Associate Professor, Johns Hopkins Univ.	2009
Philip Schuster	Professor, SLAC	2007

Natalia Toro	Professor, SLAC	2007
Can Kilic	Professor, UT-Austin	2006
Rakhi Mahbubani	Research Assoc, Rudjer Boskovic Institute	2006
Leonardo Senatore	Professor, ETH Zurich	2006
Jesse Thaler	Professor, MIT	2006
Devin Walker	Assistant Professor, Dartmouth	2006
Itay Yavin	Junior Faculty, Perimeter Inst./McMaster	2006
Thomas Gregoire	Professor, Carleton University	2003
Jay Wacker	Manager, Ontology Development, Apple	2003

Nima Arkani-Hamed Publications

1. Nima Arkani-Hamed, H. Frost, G. Salvatori, “The Cut Equation”, (2024), hep-th/2412.21027.
2. Nima Arkani-Hamed, C. Figueiredo, G. Remmen, “Open String Amplitudes: Singularities, Asymptotics, and New Representations”, (2024), hep-th/2412.20639.
3. Nima Arkani-Hamed, C. Figueiredo, F. Vazão, “Cosmohedra”, (2024), hep-th/2412-19881.
4. Nima Arkani-Hamed, Q. Cao, J. Dong, et al, (2024), “Surface Kinematics and "The" Yang-Mills Integrand”, (2024), hep-th/2408-11891.
5. Nima Arkani-Hamed, C. Figueiredo, “All-order splits and multi-soft limits for particle and string amplitudes”, (2024), hep-th/2405-09608.
6. Nima Arkani Hamed, C. Figueiredo, “Circles and Triangles, the NLSM and $\text{Tr}(\Phi^3)$ ”, (2024), hep-th/2403-04826.
7. Nima Arkani-Hamed, C. Figueiredo, H. Frost, G. Salvatori, “Tropical Amplitudes For Colored Lagrangians”, (2024) hep-th/2402-06719.
8. Nima Arkani-Hamed, Q. Cao, J. Dong et al, “Nonlinear Sigma model amplitudes to all loop orders are contained in the $\text{Tr}(\Phi^3)$ theory”, (2024), hep-th/2401-05483.
9. Nima Arkani-Hamed, Q. Cao, J. Dong et al, “Scalar-Scaffolded Gluons and the Combinatorial Origins of Yang-Mills Theory” (2023), hep-th/2401-00041.
10. Nima Arkani-Hamed, Q. Cao, J. Dong et al, “Hidden zeros for particle/string amplitudes and the unity of colored scalars, pions and gluons”, (2023), hep-th/2312-16282.
11. Nima Arkani-Hamed, C. Cheung, C. Figueiredo, G. Remmen, “Multiparticle Factorization and the Rigidity of String Theory”, (2023), hep-th/2312-07652.
12. Nima Arkani-Hamed, D. Baumann, A. Hillman, et al, “Kinematic Flow and the Emergence of Time”, (2023), hep-th/2312-05300.
13. Nima Arkani-Hamed, D. Baumann, A. Hillman, et al, “Differential Equations for Cosmological Correlators”, (2023), hep-th/2312-05303.
14. Nima Arkani-Hamed, W. Flieger, J. Henn, et al, “Coulomb Branch Amplitudes from a Deformed Amplituhedron Geometry”, (2023), hep-th/2311-10814.

15. Nima Arkani-Hamed, H. Frost, G. Salvatori, et al, “All Loop Scattering For All Multiplicity”, (2023), hep-th/2311-09284.
16. Nima Arkani-Hamed, H. Frost, G. Salvatori, et al, “All Loop Scattering As A Counting Problem”, (2023), hep-th/2309-15913
17. Nima Arkani-Hamed, L. Dixon, A. McLeod, M. Spradlin, J. Trnka, et al., “Solving Scattering $N = 4$ Super-Yang Mills Theory”, (2022), hep-th/2207.10636.
18. Nima Arkani-Hamed, A. Hillman, and S. Mizera, “Feynman polytopes and the tropical geometry of UV and IR divergences”, (2022), hep-th/2202.12296.
19. Nima Arkani-Hamed, L. Eberhardt, Y. Huang, and S. Mizera, “On unitarity of tree-level string amplitudes”, (2022), hep-th/2201.11575.
20. Nima Arkani-Hamed, J. Henn and J. Trnka, “Nonperturbative negative geometries: amplitudes at strong coupling and the amplituhedron”, (2021), hep-th/2112.06956.
21. Nima Arkani-Hamed, Y. Huang, J. Liu, and G. Remmen, “Causality, unitarity and the weak gravity conjecture”, (2021), hep-th/2109.13937.
22. Nima Arkani-Hamed and K. Harigaya, “Naturalness and the muon magnetic moment”, (2021), hep-ph/2106.01373.
23. H. Ali, Nima Arkani-Hamed, I. Banta, S. Benevedes, D. Buttazzo, et al., “The muon Smasher’s guide”, (2021), hep-ph/2103.14043.
24. Nima Arkani-Hamed, T. Huang and Y. Huang, “The EFT-Hedron”, (2020), hep-th/2012.15849.
25. Nima Arkani-Hamed, R.T. D’Agnolo and H.D. Kim, “Weak scale as a trigger”, (2020), hep-ph/2012.04652.
26. Nima Arkani-Hamed, A. Raclariu and A. Strominger, “Celestial amplitudes from UV to IR”, (2020), hep-th/2012.04208.
27. Nima Arkani-Hamed, S. He and T. Lam, “Cluster Configuration Spaces of Finite Type”, (2020), math.AG/2005.11419.
28. Nima Arkani-Hamed, T. Lam and M. Spradlin, “Positive configuration space”, (2020), math.co/2003.03904.
29. Nima Arkani-Hamed, S. He, G. Salvatori and H. Thomas, “Causal Diamonds, Cluster Polytopes and Scattering Amplitudes”, (2019), hep-th/1912.12948.
30. Nima Arkani-Hamed, S. He, T. Lam and H. Thomas, “Binary Geometries, Generalized Particles and Strings, and Cluster Algebras”, (2019), hep-th/1912.11764.
31. Nima Arkani-Hamed, S. He and T. Lam, “Stringy Canonical Forms”, (2019), hep-th/1912.08707.
32. Nima Arkani-Hamed, T. Lam and M. Spradlin, “Non-perturbative geometries for planar $N = 4$ SYM amplitudes”, (2019), hep-th/1912.08222.
33. Nima Arkani-Hamed, Y.-T. Huang and D. O’Connell, “Kerr Black Holes as Elementary Particles”, (2020), *JHEP* 01 (2020), hep-th/1906.10110.

34. Nima Arkani-Hamed, C. Langer, A. Y. Strikant and J. Trnka, “Deep Into the Amplituhedron: Amplitude Singularities at All Loops and Legs”, (2019), *Phys. Rev. Lett.* **122**, 051601, hep-th/1810.08208.
35. Nima Arkani-Hamed, Y.-T. Huang and S.-H. Shao, “On the Positive Geometry of Conformal Field Theory”, (2018), hep-th/1812.07739.
36. Nima Arkani-Hamed and P. Benincasa, “On the Emergence of Lorentz Invariance and Unitarity from the Scatter Facet of Cosmological Polytopes”, (2018), hep-th/1811.01125.
37. Nima Arkani-Hamed, D. Baumann, H. Lee and G. L. Pimentel, “The Cosmological Bootstrap: Inflationary Correlators from Symmetries and Singularities”, (2018), hep-th/1811.00024
38. Nima Arkani-Hamed and Ellis Ye Yuan, “One-Loop Integrals from Spherical Projections of Planes and Quadrics”, (2017), hep-th/1712.09991.
39. Nima Arkani-Hamed, T.-C. Huang, and Y.-T. Huang, “Scattering Amplitudes for All Masses and Spins”, (2017), hep-th/1709.04891.
40. Nima Arkani-Hamed, Y. Bai, S. He and G. Yan, “Scattering Forms and the Positive Geometry of Kinematics, Color and the Worldsheet”, (2018), *JHEP* **1805**, 096; hep-th/1711.09102.
41. Nima Arkani-Hamed, P. Benincasa, and A. Postnikov, “Cosmological Polytopes and the Wavefunction of the Universe”, (2017), hep-th/1709.02813.
42. Nima Arkani-Hamed, H. Thomas and J. Trnka, “Unwinding the Amplituhedron in Binary”, (2018), *JHEP* **1801**, 016; hep-th/1704.05069.
43. Nima Arkani-Hamed, Y. Bai and T. Lam, “Positive Geometries and Canonical Forms”, *JHEP* **1711**, 039; (2017), hep-th/1703.04541.
44. Nima Arkani-Hamed, L. Rodina and J. Trnka, “Locality and Unitarity from Singularities and Gauge Invariance”, (2018), *Phys. Rev. Lett.* **120**, 231602; hep-th/1612.02797.
45. Nima Arkani-Hamed, R.T. D'Agnolo, M. Low and D. Pinner, “Unification and New Particles at the LHC”, (2016), *JHEP* **1611**, 082; hep-ph/1608.01675.
46. Nima Arkani-Hamed, T. Cohen, R.T. D'Agnolo, A. Hook, H.D. Kim and D. Pinner, “Solving the Hierarchy Problem at Reheating with a Large Number of Degrees of Freedom”, (2016) *Phys. Rev. Lett.* **117**, 251801, hep-ph/1607.06821.
47. Nima Arkani-Hamed, T. Han, M. Mangano and L.-T. Wang, “Physics Opportunities of a 100 TeV Proton-Proton Collider”, (2016), *Phys. Rept.* **659**, 1-49; hep-ph/1411.06495.
48. Nima Arkani-Hamed and J. Maldacena, “Cosmological Collider Physics”, (2015), hep-th/1503.08043.
49. Nima Arkani-Hamed, A. Hodges and J. Trnka, “Positive Amplitudes In the Amplituhedron”, (2016), *JHEP* **1508**, 030; hep-th/1412.8478
50. Nima Arkani-Hamed, J. L. Bourjaily, F. Cachazo, A. Postnikov and J. Trnka, “On-Shell Structures of MHV Amplitudes Beyond the Planar Limit”, (2015), *JHEP* **1506**, 179; hep-th/1412.8475.

51. Nima Arkani-Hamed, J.L. Bourjaily, F. Cachazo and J. Trnka, “Singularity Structure of Maximally Supersymmetric Scattering Amplitudes”, (2014), *Phys. Rev. Lett.* **113**, 261603, hep-th/1410.0354.
52. Nima Arkani-Hamed, and J. Trnka, “Into the Amplituhedron”, (2015), *JHEP* **1506**, 182; hep-th/1312.7878.
53. Nima Arkani-Hamed, “Beyond the Standard Model Theory”, (2013), *Phys. Scr.* **T158**, 014023.
54. Nima Arkani-Hamed, and J. Trnka, “The Amplituhedron”, (2013), *JHEP* **1410**, 030; hep-th/1312.2007.
55. Nima Arkani-Hamed *et al.*, “Working Group Report: Quark Flavor Physics”, (2013), Conference Proceedings: C13-07-29.12; hep-ex/1311.1076.
56. Nima Arkani-Hamed, A. Gupta, D. E. Kaplan, N. Weiner, and T. Zorawski, “Simply Unnatural Supersymmetry”, (2012), hep-ph/1212.6971.
57. Nima Arkani-Hamed, J. L. Bourjaily, F. Cachazo, A.B. Goncharov, A. Postnikov, and J. Trnka, “Grassmannian Geometry of Scattering Amplitudes”, (2016), *Cambridge Univ. Press*, Online ISBN: 9781316091548; hep-th/1212.5605.
58. Nima Arkani-Hamed, K. Blum, R.T. D'Agnolo and J.J. Fan, “2:1 for Naturalness at the LHC?”, *JHEP* **1301**, 149 (2013), hep-ph/1207-4482.
59. Nima Arkani-Hamed, *et al.*, “Fundamental Physics at the Intensity Frontier”, (2012), Conference: C11-11-30.2, DOI: 10.2172/1042577; hep-ex/1205.2671.
60. Nima Arkani-Hamed, *et al.*, “Simplified Models for LHC New Physics Searches”, *J. Phys.* **G39**, 105005 (2012), hep-ph/1105.2838.
61. Nima Arkani-Hamed, J. Bourjaily, F. Cachazo, A. Hodges and J. Trnka, “A Note on Polytopes for Scattering Amplitudes”, *JHEP* **1204**, 081 (2012), hep-th/1012.6030.
62. Nima Arkani-Hamed, J. Bourjaily, F. Cachazo and J. Trnka, “Local Integrals for Planar Scattering Amplitudes”, *JHEP* **1206**, 125 (2012), hep-th/1012.6032.
63. Nima Arkani-Hamed, J. Bourjaily, F. Cachazo, S. Caron-Huot and J. Trnka, “The All-Loop Integrand for Scattering Amplitudes in Planar $N = 4$ SYM”, *JHEP* **1101**, 041 (2011); hep-th/1008.2958.
64. Nima Arkani-Hamed, F. Cachazo, and C. Cheung, “The Grassmannian Origin Of Dual Superconformal Invariance”, *JHEP* **1003**, 036 (2010), hep-th/0909.0483.
65. Nima Arkani-Hamed, F. Cachazo, C. Cheung and J. Kaplan, “A Duality for the S Matrix”, *JHEP* **1003**, 020 (2010), hep-th/0907.5418.
66. Nima Arkani-Hamed, J. Bourjaily, F. Cachazo and J. Trnka, “Local Spacetime Physics from the Grassmannian”, *JHEP* **1101**, 108 (2011), hep-th/0912.3249.
67. Nima Arkani-Hamed, J. Bourjaily, F. Cachazo and J. Trnka, “Unification of Residues and Grassmannian Dualities”, *JHEP* **1101**, 049 (2011), hep-th/0912.4912.
68. Nima Arkani-Hamed, F. Cachazo, C. Cheung and J. Kaplan, “The S-Matrix in Twistor Space”, *JHEP* **1003**, 110 (2010). hep-th/0903.2110.

69. Nima Arkani-Hamed, D.P. Finkbeiner, T. Slatyer and N. Weiner, “A Theory of Dark Matter” *Phys.Rev.D***79**:015014, (2009). hep-ph/0810.0713
70. Nima Arkani-Hamed and N. Weiner, “LHC Signals for a SuperUnified Theory of Dark Matter” *JHEP* **0812**;104 (2008), doi: 10.1088/1126-6708/2008/12/104.
71. Nima Arkani-Hamed, F. Cachazo and J. Kaplan, “What is the Simplest Quantum Field Theory?” *JHEP* **1009**;016, (2010). hep-th/0808.1446.
72. Nima Arkani-Hamed and J. Kaplan, “On Tree Amplitudes in Gauge Theory and Gravity” *JHEP* **0801**;076, (2008), doi: 10.1088/1126-6708/2008/04/076. hep-th/0801.2385.
73. Nima Arkani-Hamed, A. Gupta, D.E. Kaplan, N. Weiner, and T. Zorawski, “Simply Unnatural Supersymmetry,” (2012) hep-ph/1212.6971.
74. Nima Arkani-Hamed, J.L. Bourjaily, F. Cachazo, A.B. Goncharov, A. Posnikov, and J. Trnka, “Grassmannian Geometry of Scattering Amplitudes,” (2016), Cambridge Univ. Press, Online ISBN: 9781316091548, DOI: 10.1017/CBO9781316091548; hep-th/1212.5605.
75. Nima Arkani-Hamed, S. Dubovsky, L. Senatore, and G. Villadoro, “(No) Eternal Inflation and Precision Higgs Physics,” *JHEP* **03**;075 (2008), doi: 10.1088/1126-6708/2008/03/075. hep-th/0801.2399.
76. Nima Arkani-Hamed, J. Orgera and J. Polchinski, “Euclidean Wormholes in String Theory,” *JHEP* **0712**;018 (2007) hep-th/0705.2768.
77. Nima Arkani-Hamed, S. Dubovsky, A. Nicolis, E. Trincherini and G. Villadoro, “A Measure of deSitter entropy and eternal inflation”, *JHEP* **0705**;055, (2007) hep-ph/0704:1814.
78. Nima Arkani-Hamed, S. Dubovsky, A. Nicolis and G. Villadoro, “Quantum Horizons of the Standard Model Landscape,” *JHEP* **0706**; 078, (2007) hep-th/0703067.
79. Nima Arkani-Hamed, B. Knuteson, S. Mrenna, P. Schuster, J. Thaler, N. Toro and L.-T. Wang, “MARMOSSET: The Path from LHC Data to the New Standard Model via On-Shell Effective Theories,” (2007) hep-ph/0703088.
80. Adams, Nima Arkani-Hamed, S. Dubovsky, A. Nicolis and R. Rattazzi, “Causality, analyticity and an IR obstruction to UV completion,” *JHEP* **0610**, 014 (2006).
81. Nima Arkani-Hamed, A. Delgado and G.F. Giudice, “The Well-tempered neutralino,” *Nucl. Phys. B* **741**; 108-130 (2006), hep-ph/0601041.
82. Nima Arkani-Hamed, L. Motl, A. Nicolis and C. Vafa, “The String landscape, black holes and gravity as the weakest force,” *JHEP* **0706**, 060 (2007), hep-th/0601001.
83. Nima Arkani-Hamed, G.L. Kane, J. Thaler and L-T. Wang, “Supersymmetry and the LHC inverse problem,” *JHEP* **0608**;070 (2006). hep-ph/0512190.
84. Nima Arkani-Hamed, H-C. Cheng, M.A. Luty, S. Mukohyama and T. Wiseman, “Dynamics of gravity in a Higgs phase,” *JHEP* **0701**; 036 (2007). hep-ph/0507120.
85. Nima Arkani-Hamed, S. Dimopoulos and S. Kachru, “Predictive landscapes and new physics at a TeV,” (2005) hep-th/0501082.

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87. Nima Arkani-Hamed, S. Dimopoulos, G.F. Giudice and A. Romanino, “Aspects of split supersymmetry,” *Nucl. Phys.* **B709**;3-46 (2005). hep-ph/0409232.
88. Nima Arkani-Hamed, H-C Cheng, M.A. Luty and J. Thaler, “Universal dynamics of spontaneous Lorentz violation and a new spin-dependent inverse-square law force,” *JHEP* **0507**;029 (2005). hep-ph/0407034.
89. Nima Arkani-Hamed and S. Dimopoulos, “Supersymmetric unification without low energy supersymmetry and signatures for fine-tuning at the LHC,” *JHEP* **0506**; 073 (2005).
90. Nima Arkani-Hamed, P. Creminelli, S. Mukohyama and M. Zaldarriaga, “Ghost inflation,” *JCAP* **0404:001** (2004). hep-th/0312100.
91. Nima Arkani-Hamed, H-C. Cheng, M.A. Luty and S. Mukohyama, “Ghost condensation and a consistent infrared modification of gravity,” *JHEP* **0405;074** (2004). hep-th/0312099.
92. Nima Arkani-Hamed and M. D. Schwartz, “Discrete gravitational dimensions,” HUTP-03-A015, Feb 2003. *Phys. Rev. D* **69**:104001 (2004). hep-th/0302110.
93. Nima Arkani-Hamed, H-C. Cheng, P. Creminelli and L. Randall, “Pseudonatural inflation,” *JCAP* **0307;003** (2003). hep-th/0302034.
94. Nima Arkani-Hamed, H-C. Cheng, P. Creminelli and L. Randall, “Extra natural inflation,” *Phys. Rev. Lett.* **90**:221302 (2003). hep-th/0301218.
95. Nima Arkani-Hamed, H. Georgi and M.D. Schwartz, “Effective field theory for massive gravitons and gravity in theory space,” *Annals Phys.* **305**:96-118 (2003). hep-th/0210184.
96. Nima Arkani-Hamed, S. Dimopoulos, G. Dvali and G. Gabadadze, “Nonlocal modification of gravity and the cosmological constant problem,” (2002). hep-th/0209227.
97. Nima Arkani-Hamed, A.G. Cohen, E. Katz and A.E. Nelson, “The Littlest Higgs,” *JHEP* **0207**;034 (2002). hep-ph/0206021.
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99. Nima Arkani-Hamed, S. Dimopoulos and G. Dvali, “Large extra dimensions: A new arena for particle physics,” 2002. *Phys. Today* **55N2**:35-40 (2002).
100. Nima Arkani-Hamed, A.G. Cohen, T. Gregoire and J.G. Wacker, “Phenomenology of electroweak symmetry breaking from theory space,” *JHEP* **0208**;020 (2002). hep-ph/0202089.
101. Nima Arkani-Hamed, A.G. Cohen, D.B. Kaplan, A. Karch and L. Motl, “Deconstructing (2,0) and little string theories,” *JHEP* **0301**;083 (2003). hep-th/0110146.
102. Nima Arkani-Hamed, A.G. Cohen and H. Georgi, “Twisted supersymmetry and the topology of theory space,” *JHEP* **0207**;020 (2002). hep-th/0109082.
103. Nima Arkani-Hamed, A.G. Cohen and H. Georgi, “Accelerated unification,” (2001), hep-th/0108089.

104. Nima Arkani-Hamed, A.G. Cohen and H. Georgi, “Electroweak symmetry breaking from dimensional deconstruction,” *Phys.Lett.B***513**; 232-240 (2001). hep-ph/0105239.
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111. Nima Arkani-Hamed, S. Dimopoulos and G.R. Dvali, “The universe's unseen dimensions,” *Scientific American*, August 2000.
112. Nima Arkani-Hamed, L.J. Hall, H. Murayama, D.R. Smith and N. Weiner, “Neutrino masses at $v^{**}(3/2)$,” hep-ph/0007001.
113. Nima Arkani-Hamed, L.J. Hall, H. Murayama, D.R. Smith and N. Weiner, “Small neutrino masses from supersymmetry breaking,” *Phys. Rev. D* **64**;115011 (2001). hep-ph/0006312.
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117. Nima Arkani-Hamed et al, “Solving the hierarchy problem with exponentially large dimensions,” *Phys. Rev. D* **62**;105002 (2000). hep-ph/9912453.
118. Nima Arkani-Hamed et al, “Exponentially small supersymmetry breaking from extra dimensions,” *Phys. Rev. D* **63**; 056003 (2001). hep-ph/9911421.
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