Marcus Spradlin

Professor
Department of Physics, and
Brown Center for Theoretical Physics and Innovation
Email: Marcus_Spradlin@brown.edu

Brown University
Box 1843
182 Hope Street
Providence, RI 02912 USA

Education

1996	AB in Physics, Princeton University, summa cum laude
1997	MASt in Applied Mathematics, University of Cambridge, with distinction
1999	MA in Physics, Harvard University
2001	PhD in Physics, Harvard University Advisor: Andrew Strominger Dissertation Topic: *AdS_2 Black Holes and Soliton Moduli Spaces*

Professional Appointments

2001–2003	Research Associate, Princeton University
2003–2005	Assistant Research Physicist, Kavli Institute for Theoretical Physics
2005–2006	Member, School of Natural Sciences, Institute for Advanced Study
2006–2011	Manning Assistant Professor, Brown University
2011	Member, School of Natural Sciences, Institute for Advanced Study
2012–2013	Scientific Associate, Theory Group, CERN
2011–2017	Associate Professor, Brown University
2017–2018	Member, School of Natural Sciences, Institute for Advanced Study
2013–	Visiting Scientist, CERN Theory Group
2017–	Professor, Brown University
2023–2024	Visiting Scholar, Department of Physics, Harvard University

Academic Honors

1994	Barry M. Goldwater Scholarship
1995	Kusaka Memorial Prize, Princeton University Department of Physics
1995	Barry M. Goldwater Scholarship
1996	Kusaka Memorial Prize, Princeton University Department of Physics
1996	Elected to Sigma Xi
1996	Elected to Phi Beta Kappa
1996	NSF Graduate Research Fellowship in Theoretical Physics
2000	Maurice Goldhaber Prize, Harvard University Department of Physics
2006	Appointed Manning Assistant Professor, Brown University
2007	DOE Outstanding Junior Investigator Award
2008	Richard B. Salomon Faculty Research Award, Brown University
2017	Simons Fellowship in Theoretical Physics
2018	Elected Fellow of the American Physical Society
2023	Bershadsky Distinguished Visiting Fellowship, Harvard University Department of Physics

Publications

Over 9,300 citations, h-index 54 (according to Google Scholar)

♠ = 500+ citations (2)
♡ = 250+ citations (5)
♢ = 100+ citations (17)
♣ = 50+ citations (33)

Books Edited

1. Journal of Physics A special issue on "Scattering Amplitudes in Gauge Theories: Progress and Outlook," J. Phys. A **44** 450301 (2011), ISSN: 1751-8113, with R. Roiban and A. Volovich eds.

Chapters in Books

2. "Noncommutative solitons I," Clay Math. Proc. **1**, 1 2002, ISBN: 0821829815, with R. Gopakumar and M. Headrick.

♠ 3. "Les Houches lectures on de Sitter space," Proceedings of the LXXVI Les Houches school *Unity from Duality: Gravity, Gauge Theory and Strings*, 2001 [hep-th/0110007], ISBN: 3540002766, with A. Strominger and A. Volovich.

4. "Light-cone string field theory in a plane wave," to appear in the Lecture Notes Series of the ICTP Spring School on Superstring Theory and Related Topics, 2003 [hep-th/0310033], with A. Volovich.

5. "Yang-Mills amplitudes from twistor string theory," Snowbird Lectures on String Geometry: Proceedings of AMS-IMS-SIAM Joint Summer Research Conference on String Geometry, 2004, ISBN: 0821836633, with R. Roiban and A. Volovich.

6. "Multiloop gluon amplitudes and AdS/CFT," Proceedings of the 9th Workshop on Non-Perturbative Quantum Chromodynamics, 2007 [`http://www.slac.stanford.edu/econf/C0706044/`].

7. "The leading singularity method at two loops," to appear in the Proceedings of Quarks 2008 [`http://quarks.inr.ac.ru/2008/proceedings/`].

8. "Graviton scattering made simple(r)," Proceedings of the 6th International Symposium on Quantum Theory and Symmetries (QTS6), J. Phys. Conf. Ser. **462**, no. 1, 012049 (2013), ISSN: 1742-6588.

9. "Amplitudes in $\mathcal{N} = 4$ super-Yang-Mills Theory," TASI 2014 Journeys Through the Precision Frontier: Amplitudes for Colliders, World Scientific, ISBN: 978-9814678759.

10. "Direct integration for multi-leg amplitudes: tips, tricks, and when they fail," *Antidifferentiation and the Calculation of Feynman Amplitudes*, 2020, [arXiv:2103.15423], ISBN: 978-3030802189, with J. L. Bourjaily, Y.-H. He, A. J. McLeod and C. Vergu.

Refereed Journal Articles

♡ 11. "Measurement of the neutral weak form factors of the proton," Phys. Rev. Lett. **82**, 1096 (1999) [nucl-ex/9810012], with K. A. Aniol *et al.* [HAPPEX Collaboration].

♢ 12. "Vacuum states for AdS_2 black holes," JHEP **9911**, 021 (1999) [hep-th/9904143], with A. Strominger.

13. "Supergravity spectrum on $AdS_2 \times S^2$," JHEP **9909**, 029 (1999) [hep-th/9906056], with J. Michelson.

♣ 14. "Superconformal multi-black hole moduli spaces in four dimensions," JHEP **0204**, 003 (2002) [hep-th/9911001], with A. Maloney and A. Strominger.

♢ 15. "New measurement of parity violation in elastic electron proton scattering and implications for strange form factors," Phys. Lett. B **509**, 211 (2001) [nucl-ex/0006002], with K. A. Aniol *et al.* [HAPPEX Collaboration].

♣ 16. "On noncommutative multi-solitons," Commun. Math. Phys. **233**, 355 (2003) [hep-th/0103256], with R. Gopakumar and M. Headrick.

17. "Noncommutative solitons on Kähler manifolds," JHEP **0203**, 011 (2002) [hep-th/0106180], with A. Volovich.

♢ 18. "Vacuum states and the S-matrix in dS/CFT," Phys. Rev. D **65**, 104037 (2002) [hep-th/0112223], with A. Volovich.

♢ 19. "Superstring interactions in a pp-wave background," Phys. Rev. D **66**, 086004 (2002) [hep-th/0204146], with A. Volovich.

♢ 20. "Superstring interactions in a pp-wave background II," JHEP **0301**, 036 (2003) [hep-th/0206073], with A. Volovich.

♣ 21. "New effects in gauge theory from pp-wave superstrings," Phys. Lett. B **548**, 111 (2002) [hep-th/0206221], with I. R. Klebanov and A. Volovich.

♣ 22. "Tracing the string: BMN correspondence at finite J^2/N," JHEP **0305**, 022 (2003) [hep-th/0210102], with J. Pearson, D. Vaman, H. Verlinde and A. Volovich.

♣ 23. "Explicit formulas for Neumann coefficients in the plane-wave geometry," Phys. Rev. D **67**, 086005 (2003) [hep-th/0211198], with Y.-H. He, J. H. Schwarz and A. Volovich.

♣ 24. "On light-cone SFT contact terms in a plane wave," JHEP **0310**, 055 (2003) [hep-th/0211220], with R. Roiban and A. Volovich.

25. "Note on plane wave quantum mechanics," Phys. Lett. B **565**, 253 (2003) [hep-th/0303220], with A. Volovich.

26. "On the S-matrix of type 0 string theory," JHEP **0311**, 012 (2003) [hep-th/0309148], with O. DeWolfe, R. Roiban, A. Volovich and J. Walcher.

♢ 27. "A googly amplitude from the B-model in twistor space," JHEP **0404**, 012 (2004) [hep-th/0402016], with R. Roiban and A. Volovich.

♡ 28. "Parity-violating electroweak asymmetry in $\vec{e}p$ scattering," Phys. Rev. C **69**, 065501 (2004) [nucl-ex/0402004], with K. A. Aniol *et al.* [HAPPEX Collaboration].

♡ 29. "Tree-level S-matrix of Yang-Mills theory," Phys. Rev. D **70**, 026009 (2004) [hep-th/0403190], with R. Roiban and A. Volovich.

♣ 30. "A pendant for Pólya: The one-loop partition function of $\mathcal{N} = 4$ SYM on $\mathbb{R} \times S^3$," Nucl. Phys. B **711**, 199 (2005) [hep-th/0408178], with A. Volovich.

31. "Two-loop partition function in the planar plane-wave matrix model," Phys. Lett. B **603**, 239 (2004) [hep-th/0409178], with M. Van Raamsdonk and A. Volovich.

♢ 32. "Dissolving $\mathcal{N} = 4$ loop amplitudes into QCD tree amplitudes," Phys. Rev. Lett. **94**, 102002 (2005) [hep-th/0412265], with R. Roiban and A. Volovich.

33. "Yang-Mills amplitudes from string theory in twistor space," Int. J. Mod. Phys. A **20**, 3416 (2005).

♣ 34. "All split helicity tree-level gluon amplitudes," Phys. Rev. D **71**, 105017 (2005) [hep-th/0503198], with R. Britto, B. Feng, R. Roiban and A. Volovich.

35. "String theory in β deformed spacetimes," JHEP **0511**, 039 (2005) [hep-th/0509036], with T. Takayanagi and A. Volovich.

36. "Hidden beauty in multiloop amplitudes," JHEP **0607**, 007 (2006) [hep-th/0601031], with F. Cachazo and A. Volovich.

♣ 37. "Iterative structure within the five-particle two-loop amplitude," Phys. Rev. D **74**, 045020 (2006) [hep-th/0602228], with F. Cachazo and A. Volovich.

♢ 38. "Dressing the giant magnon," JHEP **0610**, 012 (2006) [hep-th/0607009], with A. Volovich.

♣ 39. "Dressing the giant magnon II," JHEP **0703**, 020 (2007) [hep-th/0611033], with C. Kalousios and A. Volovich.

♢ 40. "Four-loop cusp anomalous dimension from obstructions," Phys. Rev. D **75**, 105011 (2007) [hep-th/0612309], with F. Cachazo and A. Volovich.

41. "Semiclassical quantization of the giant magnon," JHEP **0706**, 032 (2007) [arXiv:0704.2389], with G. Papathanasiou.

♣ 42. "Four-loop collinear anomalous dimension in $\mathcal{N} = 4$ Yang-Mills theory," Phys. Rev. D **76**, 106004 (2007) [arXiv:0707.1903], with F. Cachazo and A. Volovich.

43. "Dressing the giant gluon," JHEP **0712**, 047 (2007) [arXiv:0708.0818], with A. Jevicki, C. Kalousios and A. Volovich.

♣ 44. "New dual conformally invariant off-shell integrals," Phys. Rev. D **77**, 025018 (2008) [arXiv:0709.4665], with D. Nguyen and A. Volovich.

45. "Scattering of single spikes," JHEP **0802**, 009 (2008) [arXiv:0710.2300], with R. Ishizeki, M. Kruczenski and A. Volovich.

♡ 46. "The two-loop six-gluon MHV amplitude in maximally supersymmetric Yang-Mills theory," Phys. Rev. D **78**, 045007 (2008) [arXiv:0803.1465], with Z. Bern, L. J. Dixon, D. A. Kosower, R. Roiban, C. Vergu and A. Volovich.

♣ 47. "Leading singularities of the two-loop six-particle MHV amplitude," Phys. Rev. D **78**, 105022 (2008) [arXiv:0805.4832], with F. Cachazo and A. Volovich.

♣ 48. "Three-loop leading singularities and BDS ansatz for five particles," Phys. Rev. D **78**, 085025 (2008) [arXiv:0808.1054], with A. Volovich and C. Wen.

49. "Quite a character: the spectrum of Yang-Mills on S^3," Phys. Lett. B **672**, 382 (2009) [arXiv:0812.4693], with T. H. Newton.

♣ 50. "Three applications of a bonus relation for gravity amplitudes," Phys. Lett. B **674**, 69 (2009) [arXiv:0812.4767], with A. Volovich and C. Wen.

♣ 51. "Tree-level amplitudes in $\mathcal{N} = 8$ supergravity," Phys. Rev. D **79**, 105018 (2009) [arXiv:0901.2363], with J. Drummond, A. Volovich and C. Wen.

52. "Dressed giant magnons on $\mathbb{CP}^3$," JHEP **0907**, 006 (2009) [arXiv:0902.3179], with C. Kalousios and A. Volovich.

53. "The morphology of $\mathcal{N} = 6$ Chern-Simons theory," JHEP **0907**, 036 (2009) [arXiv:0903.2548], with G. Papathanasiou.

♢ 54. "The tree formula for MHV graviton amplitudes," JHEP **1007**, 045 (2010) [arXiv:0907.2276], with D. Nguyen, A. Volovich and C. Wen.

♣ 55. "From twistor string theory to recursion relations," Phys. Rev. D **80**, 085022 (2009) [arXiv:0909.0229], with A. Volovich.

56. "Two-loop spectroscopy of short ABJM operators," JHEP **1002**, 072 (2010) [arXiv:0911.2220], with G. Papathanasiou.

♢ 57. "Higgs-regularized three-loop four-gluon amplitude in $\mathcal{N} = 4$ SYM: exponentiation and Regge limits," JHEP **1004**, 038 (2010) [arXiv:1001.1358], with Johannes M. Henn, Stephen G. Naculich and Howard J. Schnitzer.

58. "A surprise in the amplitude/Wilson loop duality," JHEP **1007**, 080 (2010) [arXiv:1004.2855], with A. Brandhuber, P. Heslop, P. Katsaroumpas, D. Nguyen, B. Spence and G. Travaglini.

♣ 59. "More loops and legs in Higgs-regulated $\mathcal{N} = 4$ SYM amplitudes," JHEP **1008**, 002 (2010) [arXiv:1004.5381], with J. M. Henn, S. G. Naculich and H. J. Schnitzer.

♠ 60. "Classical polylogarithms for amplitudes and Wilson loops," Phys. Rev. Lett. **105**, 151605 (2010) [arXiv:1006.5703], with A.B. Goncharov, C. Vergu and A. Volovich.

♣ 61. "Symbols of one-loop integrals from mixed Tate motives," JHEP **1111**, 084 (2011) [arXiv:1105.2024], with A. Volovich.

62. "All two-loop MHV amplitudes in multi-Regge kinematics from applied symbology," Phys. Rev. D **85**, 085019 (2012) [arXiv:1112.6365], with A. Prygarin, C. Vergu and A. Volovich.

♣ 63. "The soft-collinear bootstrap: $\mathcal{N} = 4$ Yang-Mills amplitudes at six and seven loops," JHEP **1203**, 032 (2012) [arXiv:1112.6432], with J. L. Bourjaily, A. DiRe, A. Shaikh and A. Volovich.

64. "Collinear and soft limits of multi-loop integrands in $\mathcal{N} = 4$ Yang-Mills," JHEP **1205**, 027 (2012) [arXiv:1203.1915], with J. Golden.

♣ 65. "Mellin amplitudes for dual conformal integrals," JHEP **1208**, 072 (2012) [arXiv:1203.6362], with M. F. Paulos and A. Volovich.

♣ 66. "Star integrals, convolutions and simplices," JHEP **1305**, 105 (2013) [arXiv:1301.2500], with D. Nandan, M. F. Paulos and A. Volovich.

♡ 67. "Motivic amplitudes and cluster coordinates," JHEP **1401**, 091 (2014) [arXiv:1305.1617], with J. Golden, A. B. Goncharov, C. Vergu and A. Volovich.

68. "The differential of all two-loop MHV amplitudes in $\mathcal{N} = 4$ Yang-Mills theory," JHEP **1309**, 111 (2013) [arXiv:1306.1833], with J. Golden.

♢ 69. "Cluster polylogarithms for scattering amplitudes," J. Phys. A **47**, no. 47, 474005 (2014) [arXiv:1401.6446], with J. Golden, M. F. Paulos and A. Volovich.

♣ 70. "An analytic result for the two-loop seven-point MHV amplitude in $\mathcal{N} = 4$ SYM," JHEP **1408**, 154 (2014) [arXiv:1406.2055], with J. Golden.

♣ 71. "Cluster bootstrap for two-loop MHV amplitudes," JHEP **1502**, 002 (2015) [arXiv:1411.3289], with J. Golden.

♢ 72. "A symbol of uniqueness: the cluster bootstrap for the 3-Loop MHV heptagon," JHEP **1503**, 072 (2015) [arXiv:1412.3763], with J. M. Drummond and G. Papathanasiou.

73. "Hedgehog bases for A_n cluster polylogarithms and an application to six-point amplitudes," JHEP **1511**, 136 (2015) [arXiv:1507.01950], with D. Parker, A. Scherlis and A. Volovich.

♣ 74. "Landau singularities and symbology: one- and Two-loop MHV amplitudes in SYM theory," JHEP **1603**, 069 (2016) [arXiv:1512.07909], with T. Dennen and A. Volovich.

75. "Cluster functions and scattering amplitudes for six and seven points," JHEP **1707**, 016 (2017) [arXiv:1512.07910], with T. Harrington.

♣ 76. "Landau singularities from the amplituhedron," JHEP **1706**, 152 (2017) [arXiv:1612.02708], with T. Dennen, I. Prlina, S. Stanojevic and A. Volovich.

♢ 77. "A supersymmetric SYK-like tensor model," JHEP **1705**, 062 (2017) [arXiv:1612.03851], with C. Peng and A. Volovich.

♢ 78. "Heptagons from the Steinmann cluster bootstrap," JHEP **1702**, 137 (2017) [arXiv:1612.08976], with L. J. Dixon, J. Drummond, T. Harrington, A. J. McLeod and G. Papathanasiou.

♣ 79. "Correlators in the $\mathcal{N} = 2$ Supersymmetric SYK Model," JHEP **1710**, 202 (2017) [arXiv:1706.06078], with C. Peng and A. Volovich.

♣ 80. "All-helicity symbol alphabets from unwound amplituhedra," JHEP **1805**, 159 (2018) [arXiv:1711.11507], with I. Prlina, J. Stankowicz, S. Stanojevic and A. Volovich.

♢ 81. "Elliptic double-box integrals: massless scattering amplitudes beyond polylogarithms," Phys. Rev. Lett. **120**, no. 12, 121603 (2018) [arXiv:1712.02785], with J. L. Bourjaily, A. J. McLeod, M. von Hippel and M. Wilhelm.

♣ 82. "Boundaries of amplituhedra and NMHV symbol alphabets at two loops," JHEP **1804**, 049 (2018) [arXiv:1712.08049], with I. Prlina, J. Stankowicz and S. Stanojevic.

♣ 83. "All-loop singularities of scattering amplitudes in massless planar theories," Phys. Rev. Lett. **121**, no. 8, 081601 (2018) [arXiv:1805.11617], with I. Prlina and S. Stanojevic.

84. "The Sklyanin bracket and cluster adjacency at all multiplicity," JHEP **1903**, 195 (2019) [arXiv:1902.11286], with J. Golden, A. J. McLeod and A. Volovich.

85. "Yangian invariants and cluster adjacency in $\mathcal{N} = 4$ Yang-Mills," JHEP **1910**, 099 (2019) [arXiv:1906.10682], with J. Mago, A. Schreiber and A. Volovich.

86. "Weak separation, positivity and extremal Yangian invariants," JHEP **1909**, 093 (2019) [arXiv:1906.11034], with L. Lippstreu, J. Mago and A. Volovich.

87. "Cluster adjacency for $m = 2$ Yangian invariants," JHEP **1910**, 158 (2019) [arXiv:1908.07618], with T. Łukowski, M. Parisi and A. Volovich.

♣ 88. "Non-perturbative geometries for planar $\mathcal{N} = 4$ SYM amplitudes," JHEP **03**, 065 (2021) [arXiv:1912.08222], with N. Arkani-Hamed and T. Lam.

♣ 89. "Positive configuration space," Commun. Math. Phys. **384**, no.2, 909-954 (2021) [arXiv:2003.03904], with N. Arkani-Hamed and T. Lam.

90. "A note on one-loop cluster adjacency in $\mathcal{N} = 4$ SYM," JHEP **01**, 084 (2021) [arXiv:2005.07177], with J. Mago, A. Schreiber and A. Volovich.

91. "Symbol alphabets from plabic graphs," JHEP **10**, 128 (2020) [arXiv:2007.00646], with J. Mago, A. Schreiber and A. Volovich.

92. "Elliptic, Yangian-invariant leading singularity," Phys. Rev. Lett. **126**, no.20, 201601 (2021) [arXiv:2012.14438], with J. L. Bourjaily, N. Kalyanapuram, C. Langer and K. Patatoukos.

93. "Symbol alphabets from plabic graphs II: rational letters," JHEP **04**, 056 (2021) [arXiv:2012.15812], with J. Mago, A. Schreiber, A. Yelleshpur Srikant and A. Volovich.

94. "Symbol alphabets from tensor diagrams," JHEP **12**, 079 (2021) [arXiv:2106.01405], with L. Ren and A. Volovich.

95. "Symbol alphabets from plabic graphs III: $n = 9$," JHEP **09**, 002 (2021) [arXiv:2106.01406], with J. Mago, A. Schreiber, A. Yelleshpur Srikant and A. Volovich.

96. "Four-point correlators of light-ray operators in CCFT," JHEP **07**, 104 (2022) [arXiv:2203.04255], with Y. Hu, L. Lippstreu, A. Yelleshpur Srikant, and A. Volovich.

♣ 97. "On effective field theories with celestial duals," JHEP **08**, 251 (2022) [arXiv:2206.08322], with L. Ren, A. Yelleshpur Srikant, and A. Volovich.

98. "Loop-level gluon OPEs in celestial holography," JHEP **11**, 171 (2022) [arXiv:2208.14416], with R. Bhardwaj, L. Lippstreu, L. Ren, A. Yelleshpur Srikant and A. Volovich.

99. "Landau singularities of the 7-point ziggurat I," JHEP **07**, 024 (2024) [arXiv:2211.16425], with L. Lippstreu and A. Volovich.

100. "On unitarity of the Coon amplitude," JHEP **08**, 082 (2023) [arXiv:2212.00764], with R. Bhardwaj, S. De and A. Volovich.

101. "Landau singularities of the 7-Point ziggurat II," JHEP **01**, 069 (2024) [arXiv:2305.17069], with L. Lippstreu, A. Yelleshpur Srikant and A. Volovich.

102. "One-loop integrals from volumes of orthoschemes," JHEP **05**, 104 (2024) [arXiv:2306.04630], with L. Ren, C. Vergu and A. Volovich.

103. "Supersymmetry and the celestial Jacobi identity," JHEP **04**, 099 (2024) [arXiv:2311.01364], with A. Ball, A. Yelleshpur Srikant and A. Volovich.

104. "Unitarity of bespoke amplitudes," Phys. Rev. D **110**, no.10, 106016 (2024) [arXiv:2406.04410], with R. Bhardwaj, A. Volovich and H. C. Weng.

105. "Surfaceology for colored Yukawa theory," JHEP **09**, 160 (2024) [arXiv:2406.04411], with S. De, A. Pokraka, M. Skowronek and A. Volovich.

106. "On unitarity of the hypergeometric amplitude," JHEP **02**, 145 (2025) [arXiv:2409.09561], with G. Mansfield.

107. "From Feynman diagrams to the amplituhedron: a gentle review," Matematiche **80**, no.1, 233-254 (2025) [arXiv:2410.11757], with S. De, D. Pavlov and A. Volovich.

108. "Hidden zeros of the cosmological wavefunction," JHEP **07**, 174 (2025) [arXiv:2503.23579], with S. De, S. Paranjape, A. Pokraka and A. Volovich.

109. "Large deformations of $\mathrm{Tr}(\Phi^3)$ and the world at infinity," JHEP **01**, 076 (2026) [arXiv:2504.11253], with S. Paranjape, M. Skowronek and A. Volovich.

110. "Symbol Alphabets in QCD and Flag Cluster Algebras," JHEP **03**, 120 (2026) [arXiv:2506.11895], with A. Pokraka, A. Volovich and H. C. Weng.

Work in Review

111. "Cluster superalgebras and stringy integrals," arXiv:2111.08186 [hep-th], with S. James Gates, Jr., S.-N. Hazel Mak and A. Volovich.

112. "Split-Helicity Tree Amplitudes and Flag Cluster Algebras," arXiv:2512.09704 [hep-th], with S. Paranjape, A. Volovich and H. C. Weng, accepted for publication in JHEP.

113. "Cluster Bootstrap for Cosmological Correlators," arXiv:2603.08670 [hep-th], with S. Paranjape, M. Skowronek, A. Volovich and H. C. Weng.

114. "'Landau Analysis of One-Cycle Negative Geometries,", arXiv:2604.22683 [hep-th], with S. Paranjape, M. Skowronek, A. Volovich and H. C. Weng.

Non-Refereed Articles

♢ 115. "Functions beyond multiple polylogarithms for precision collider physics," Contribution to the 2022 Snowmass Summer Study, arXiv:2203.07088 [hep-ph], with J. L. Bourjaily, J. Broedel, E. Chaubey, C. Duhr, H. Frellesvig, M. Hidding, R. Marzucca, A. J. McLeod, L. Tancredi, C. Vergu, M. Volk, A. Volovich, M. von Hippel, S. Weinzierl, M. Wilhelm and C. Zhang.

116. "Solving scattering in $\mathcal{N} = 4$ super-Yang-Mills theory," Contribution to the 2022 Snowmass Summer Study, arXiv:2211.16425 [hep-th], with N. Arkani-Hamed, L. J. Dixon, A. J. McLeod, J. Trnka and A. Volovich.

Invited Talks

Conference Talks and Colloquia

1. Indian Strings Meeting, Harish-Chandra Research Institute (HRI), Allahabad, India, 12/2002 (declined)
2. *Strings 2003*, Yukawa Institute for Theoretical Physics (YITP), Kyoto, Japan, 07/2003 (declined)
3. *Strings in the Pyrenees*, Centro de Ciencias de Benasque Pedro Pascual, Benasque, Spain, 07/2003
4. AMS-IMS-SIAM Joint Summer Research Conference on String Geometry, Snowbird, Utah, 06/2004
5. *Modern Trends in String Theory II*, The Theoretical Physics Center at University of Porto, Porto, Portugal, 06/2004
6. KITP Conference on *QCD and String Theory*, Kavli Institute for Theoretical Physics, Santa Barbara, California, 11/2004
7. London Mathematical Society Workshop on *Twistor String Theory*, University of Oxford, England, 01/2005
8. Queen Mary University Workshop on *From Twistors to Amplitudes*, London, England, 11/2005 (declined)
9. *Frontiers in String Theory*, Banff International Research Station (BIRS), Canada, 02/2006
10. Aspen Winter Conference on *Particle Physics at the Verge of Discovery*, Colorado, 02/2006
11. *Great Lakes Strings*, University of Michigan, Ann Arbor, 04/2006

12. Plenary speaker, *Continuous Advances in QCD 2006*, University of Minnesota, Minneapolis, 05/2006
13. *Twistors, Strings, Gauge Theory and Gravity*, Perimeter Institute (PI), Waterloo, Canada, 09/2006
14. *Is $\mathcal{N} = 8$ Supergravity Finite?*, University of California, Los Angeles, 12/2006
15. *Twistors, perturbative gauge theories, supergravity and superstrings*, Arnold Sommerfeld Center for Theoretical Physics (ASC), Ludwig Maximilian University of Munich, Germany, 06/2007 (declined)
16. *Ninth Workshop on Non-Perturbative Quantum Chromodynamics*, Institut d'Astrophysique de Paris (IAP), France, 06/2007
17. London Mathematical Society Workshop on *Twistors, Strings and Scattering Amplitudes*, Institute for Particle Physics Phenomenology (IPPP), Durham, England, 08/2007 (declined)
18. *Advancing Collider Physics: From Twistors to Monte Carlos,* Galileo Galilei Institute for Theoretical Physics (GGI), Florence, Italy, 08/2007
19. *Quantum Gravity in the Southern Cone*, Punta del Este, Uruguay, 10/2007
20. *Winter Workshop on 3d Gravity*, McGill University, Montreal, Canada, 02/2008
21. *Wonders of Gauge Theory and Supergravity*, Centre CEA de Saclay, France, 06/2008 (declined)
22. *Emerging Directions in String Theory*, Banff International Research Station (BIRS), Canada, 06/2008
23. *QCD and Strings*, Center for Theoretical Studies, Eidgenössische Technische Hochschule (ETH) Zürich, Switzerland, 07/2008 (declined)
24. *Monsoon Workshop on String Theory*, Tata Institute of Fundamental Research (TIFR), Mumbai, India, 07/2008
25. *Hidden Structures in Field Theory Amplitudes*, Niels Bohr Institute (NBI), Copenhagen, Denmark, 09/2008
26. *Gauge Fields, Cosmology and Mathematical String Theory*, Banff International Research Station (BIRS), Canada, 02/2009 (declined)
27. *Amplitudes '09*, Institute for Particle Physics Phenomenology (IPPP), Durham, England, 03/2009 (declined)
28. *Quantum Theory and Symmetries 6*, University of Kentucky, Lexington, 07/2009
29. *Hidden Structures in Field Theory Amplitudes 2009*, Niels Bohr Institute (NBI), Copenhagen, Denmark, 08/2009
30. *Integrability in Gauge and String Theories 2010*, Nordic Institute for Theoretical Physics (NORDITA), Stockholm, Sweden, 06/2010
31. *Quantum Field Theory: Developments and Perspectives*, Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany, 09/2010
32. *UK Annual Theory Meeting*, Institute for Particle Physics Phenomenology (IPPP), Durham, England, 12/2010 (declined)
33. *Soft Collinear Effective Theory Workshop 2011*, Carnegie Mellon University, Pennsylvania, 03/2011
34. KITP Program on *Harmony of Scattering Amplitudes*, Kavli Institute for Theoretical Physics, Santa Barbara, California, 04/2011
35. KITP Program on *Harmony of Scattering Amplitudes*, Kavli Institute for Theoretical Physics, Santa Barbara, California, 06/2011
36. Amplitudes Workshop at the INT program *Frontiers of QCD*, University of Washington, Seattle, 09/2011 (declined)
37. *Integrability and Scattering Amplitudes*, Institut national de physique nucléaire et de physique des particules (IN2P3), Annecy, France, 11/2011 (declined)
38. *Amplitudes 2011*, University of Michigan, Ann Arbor, 11/2011

39. *UK Annual Theory Meeting*, Institute for Particle Physics Phenomenology (IPPP), Durham, England, 12/2011 (declined)
40. Plenary speaker, German Physical Society Spring Conference on Particle Physics, University of Göttingen, Germany, 03/2012
41. *Amplitudes 2012*, Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany, 03/2012
42. Nuclear and Particle Physics Colloquium, Massachusetts Institute of Technology (MIT), Boston, 03/2012
43. Isaac Newton Institute Workshop on Scattering Amplitudes, University of Cambridge, England, 04/2012
44. ICMAT Workshop on *Periods and Motives–Modern Perspectives of Perturbative Renormalization*, Institute of Mathematical Sciences, Madrid, Spain, 07/2012
45. *Scattering Amplitudes: from QCD to maximally supersymmetric Yang-Mills theory and back*, European Centre for Theoretical Studies in Nuclear Physics and Related Areas (ECT*), Trento, Italy, 07/2012 (declined)
46. *The Geometry of Scattering Amplitudes*, Banff International Research Station (BIRS), Canada, 08/2012 (declined)
47. Subrahmanian Chandrasekhar Discussion Meeting, International Centre for Theoretical Sciences (ICTS), Bangalore, India, 09/2012 (declined)
48. Joint Theory Colloquium, Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany, 11/2012
49. Indian Strings Meeting 2012, Puri, India, 12/2012 (declined)
50. Physics Department Colloquium, University of Siegen, Germany, 01/2013
51. Zürich Physics Colloquium, University of Zürich, Switzerland, 04/2013
52. *Twelfth Workshop on Non-Perturbative Quantum Chromodynamics*, Institut d'Astrophysique de Paris (ASC), France, 06/2013
53. LMS Symposium on *Polylogarithms as a bridge between Number Theory and Particle Physics*, Durham University, England, 07/2013
54. Simons Center for Geometry and Physics (SCGP) Weekly Talk, Stony Brook, New York, 11/2013
55. Colloquium, Arnold Sommerfeld Center for Theoretical Physics (ASC), Ludwig Maximillian University of Munich, Germany, 12/2013
56. *Current Themes in High Energy Physics and Cosmology*, Niels Bohr Institute (NBI), Copenhagen, Denmark, 08/2014 (declined)
57. *New Geometric Structures in Scattering Amplitudes*, Mathematical Institute, University of Oxford, England, 09/2014 (declined)
58. Colloquium, Mathematics Department, Brown University, Providence, Rhode Island, 10/2014
59. Opening Talk, *Scattering Amplitudes in Hong Kong*, The Hong Kong University of Science and Technology (HKUST), 11/2014
60. *Grassmannian Geometry of Scattering Amplitudes* workshop at Caltech, Pasadena, California, 12/2014 (declined)
61. *Great Lakes Strings*, University of Michigan, Ann Arbor, 03/2015
62. *Strings 2015*, International Centre for Theoretical Sciences (ICTS), Bangalore, India, 06/2015
63. Isaac Newton Institute Workshop on Gravity, Twistors and Amplitudes, University of Cambridge, England, 06/2016
64. *Amplitudes 2016*, Nordic Institute for Theoretical Physics (NORDITA), Stockholm, Sweden, 07/2016
65. Berlin Joint Math-Physics Meeting, Humboldt University of Berlin, Germany, 07/2016
66. *Current Themes in High Energy Physics and Cosmology*, Niels Bohr Institute (NBI), Copenhagen, Denmark, 08/2016 (declined)

67. *Recent Developments in Fields, Strings, and Gravity*, University of California, Davis, 12/2016
68. Colloquium, Arnold Sommerfeld Center for Theoretical Physics (ASC), Ludwig Maximillian University of Munich, Germany, 12/2016
69. *20 Years Later: The Many Faces of AdS/CFT*, Princeton Center for Theoretical Science (PCTS), Princeton University, 11/2017
70. *Workshop on Holography, Gauge Theories and Black Holes*, STAG Research Centre, University of Southampton, England, 03/2018 (declined)
71. *Amplitudes 2018*, SLAC National Accelerator Laboratory, Menlo Park, California, 06/2018
72. *4th USU Strings and Black Holes Workshop*, Utah State University, Logan, Utah, 04/2019
73. Workshop on *Cluster Algebras and the Geometry of Scattering Amplitudes*, Higgs Centre for Theoretical Physics, University of Edinburgh, Scotland, 03/2020 (by Zoom)
74. *Zoomplitudes 2020*, Brown University, 05/2020 (by Zoom)
75. Discussion session, *Geomplitudes*, University of California, Davis, 09/2020 (by Zoom)
76. *Positive Geometries in Scattering Amplitudes and Beyond*, Mainz Institute for Theoretical Physics, Johannes Gutenberg University, Berlin, Germany, 06/2021 (by Zoom)
77. *Nankai Symposium on Mathematical Dialogues*, Chern Institute of Mathematics, Nankai University, Tianjin, China, 08/2021 (by Zoom)
78. *Mini-Workshop: Scattering Amplitudes, Cluster Algebras, and Positive Geometries*, Mathematisches Forschungsinstitut Oberwolfach, Germany, 11/2021 (by Zoom)
79. *Joint BHI/CMSA Conference on Flat Holography*, Center of Mathematical Sciences and Applications (CMSA), Harvard University, Cambridge, 06/2022
80. *Amplitudes 2022*, Charles University, Prague, Czech Republic, 08/2022 (by Zoom)
81. Workshop on *Jumpstarting Elliptic Bootstrap Methods for Scattering Amplitudes*, Niels Bohr Institute (NBI), Copenhagen, Denmark, 09/2022
82. Workshop on *Hidden Mathematical Structures of the Amplituhedron*, Dublin Institute for Advanced Studies (DIAS), Dublin, Ireland, 04/2023
83. Workshop on *Amplifying Gravity at All Scales*, Nordic Institute for Theoretical Physics (NORDITA), Stockholm, Sweden, 07/2023
84. Celestial Kickoff Workshop, Harvard University, Cambridge, 10/2023 (declined)
85. *Positive Geometry in Particle Physics and Cosmology*, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, 02/2024
86. Workshop on Celestial and Flat Space Holography, Adolfo Ibáñez University, Santiago, Chile, 03/2024 (declined)
87. KITP Program on *What is String Theory?*, Kavli Institute for Theoretical Physics, Santa Barbara, California, 03/2024
88. *Simons Collaboration on Celestial Holography Satellite Meeting*, New York, 04/2024 (declined)
89. *Amplituhedra, Cluster Algebras, and Positive Geometry*, Center of Mathematical Sciences and Applications (CMSA), Harvard University, Cambridge, 05/2024
90. *Amplitudes 2024*, Institute for Advanced Study, Princeton, 06/2024
91. *Poitive Geometry in Scattering Amplitudes and Cosmological Correlators*, International Centre for Theoretical Sciences (ICTS), Bangalore, India, 02/2025 (declined)
92. *Bootstrapping Amplitudes from Weak to Strong Coupling*, CERN, Geneva, Switzerland, 05/2025
93. *International Workshop on New Opportunities for Particle Physics 2025*, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China, 07/20225
94. *International Congress of Basic Science*, Beijing Institute of Mathematical Sciences and Applications (BIMSA), China, 07/2025

95. *Michigan Interdisciplinary Meeting on Amplitudes: Bridges Between Physics & Mathematics*, University of Michigan, Ann Arbor, 10/2025
96. *Athens Xmas Workshop in Theoretical Physics–2025*, National and Kapodistrian University of Athens, Greece, 12/2025
97. ESI Program on *Amplitudes and Algebraic Geometry*, Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, Austria, 03/2026
98. *Prague Spring Amplitudes*, Czech Technical University in Prague, Czech Republic, 05/2026
99. *Amplitudes 2026*, Queen Mary University of London, England, 06/2026
100. *Scattering Amplitudes: from Positive Geometries to Analytic Structures*, Pollica Physics Centre, Italy, 09/2026

Lecture Series

1. Lecturer, *Trieste Spring School on Superstring Theory and Related Topics* International Centre for Theoretical Physics (ICTP), Trieste, Italy, 04/2003
2. Lecturer, International Spring School on String Theory, Zhejiang University, Hangzhou, China, 05/2005
3. Lecturer, *3rd Asian Winter School on String Theory*, Institute of Theoretical Physics, Peking University, China, 01/2009 (declined)
4. Lecturer, Theoretical Advanced Study Institute (TASI) 2014, University of Colorado, Boulder, Colorado, 06/2014
5. Lecturer, *Geometry and Physics*, Perimeter Institute (PI), Waterloo, Canada, 05/2015
6. Lecturer, International Summer School on *Theoretical Problems of Physics of Fundamental Interactions*, Zelenogorsk, Russia, 07/2015
7. Lecturer, *Amplitudes in Asia 2015*, National Taiwan University (NTU), Taipei, Taiwan, 11/2015
8. Lecturer, *Trieste Spring School on Superstring Theory and Related Topics*, International Centre for Theoretical Physics (ICTP), Trieste, Italy, 03/2017
9. Lecturer, *SFB School on Cluster Algebras*, Mathematical Institute of the University of Bonn, Germany, 03/2017
10. Lecturer, *Amplitudes 2017 Summer School*, Higgs Centre for Theoretical Physics, Edinburgh, Scotland, 07/2017
11. Lecturer, Theoretical Advanced Study Institute (TASI) 2019, University of Colorado, Boulder, Colorado, 06/2019
12. Lecturer, *Amplitudes 2020 Summer School*, University of Michigan, 05/2020 (declined)
13. Lecturer, *Recent Developments in S-matrix Theory*, International Centre for Theoretical Sciences (ICTS), Bangalore, India, 07/2020 (by Zoom)
14. *Dimers: Combinatorics, Representation Theory and Physics*, Graduate Center of the City University, New York, 08/2023
15. Lecturer, Workshop on *Polylogarithms, Cluster Algebras, and Scattering Amplitudes*, Brin Mathematics Research Center, University of Maryland, College Park, 09/2023
16. Lecturer, *Solving $\mathcal{N} = 4$ SYM via Scattering Amplitudes*, Simons Center for Geometry and Physics (SCGP), Stony Brook, New York, 01/2024
17. Lecturer, *Summer School in Total Positivity and Quantum Field Theory*, Center of Mathematical Sciences and Applications (CMSA), Harvard University, Cambridge, 06/2025
18. Lecturer, *Cluster Geometry*, Nordfjordeid Summer School 2026, Norway, 06/2026

Seminars

1. Harvard University, April 1999
2. Cornell University, December 1999
3. University of Pennsylvania, March 2000
4. Harvard University, October 2000
5. Princeton University, December 2001
6. University of Michigan, January 2002
7. Rutgers University, September 2002
8. University of Michigan, September 2002
9. University of Texas, October 2002
10. Massachusetts Institute of Technology (MIT), October 2002
11. University of North Carolina at Chapel Hill, November 2002
12. Duke University, November 2002
13. University of California, Berkeley, September 2003
14. Ohio State University, December 2003
15. Yale University, February 2004
16. University of Pennsylvania, February 2004
17. University of Southern California, February 2004
18. University of California, Davis, April 2004
19. Stanford Linear Accelerator Center (SLAC), April 2004
20. DPF (Division of Particles and Fields) Meeting of the APS, August 2004
21. University of Chicago, September 2004
22. Kavli Institute for Theoretical Physics (KITP), Santa Barbara, December 2004
23. University of Amsterdam, January 2005
24. SUNY Stony Brook, January 2005
25. University of California, Davis, February 2005
26. California Institute of Technology (MIT), February 2005
27. Johns Hopkins University, February 2005
28. Cornell University, February 2005
29. University of Maryland, February 2005
30. University of Rochester, March 2005
31. University of California, Los Angeles, March 2005
32. University of Michigan, March 2005
33. University of Washington, May 2005
34. Institute for Advanced Study (IAS), Princeton, December 2005
35. Brown University, February 2006
36. Columbia University, March 2006
37. Massachusetts Institute of Technology (MIT), September 2006
38. SUNY Stony Brook, March 2007
39. Princeton University, April 2007
40. Perimeter Institute (PI), October 2007

41. Stanford University, October 2007
42. Miami 2007 Conference, December 2007
43. Miami 2008 Conference, December 2008
44. Brandeis University, February 2009
45. University of Massachusetts, Amherst, March 2009
46. Miami 2009 Conference, December 2009
47. Yale University, March 2010
48. SLAC National Accelerator Laboratory, October 2010
49. Miami 2010 Conference, December 2010
50. Institute for Advanced Study (IAS), Princeton, January 2011
51. Kavli Institute for Theoretical Physics (KITP), Santa Barbara, April 2011
52. DPF (Division of Particles and Fields) Meeting of the APS, August 2011
53. CERN, August 2011
54. Rutgers University, September 2011
55. Miami 2011 Conference, December 2011
56. Southern Connecticut State University, February 2012
57. Brown University Mathematics Department, May 2012
58. Eidgenössische Technische Hochschule (ETH) Zürich, October 2012
59. CERN, June 2013
60. Massachusetts Institute of Technology (MIT), September 2013
61. Institute for Advanced Study (IAS), Princeton, January 2014
62. Harvard University, January 2014
63. Duke University, September 2014
64. Miami 2014 Conference, December 2014
65. Arizona State University, March 2015
66. Brandeis University, April 2015
67. Institute for Advanced Study (IAS), Princeton, January 2016
68. Rutgers University, February 2016
69. Perimeter Institute (PI), May 2016
70. CERN, July 2016
71. University of Michigan, October 2017
72. Institute for Advanced Study, November 2017
73. New York University, January 2018
74. Johannes Gutenberg-Universität, Mainz, July 2018
75. Deutsches Elektronen-Synchrotron (DESY), Hamburg, July 2018
76. Niels Bohr Institute (NBI), Copenhagen, August 2018
77. University of Cambridge, December 2018
78. Rutgers University, February 2020
79. Institute for Advanced Study Journal Club, February 2021 (by Zoom)
80. SLAC National Accelerator Laboratory, June 2023
81. Combinatorics Seminar, Harvard University Mathematics Department, February 2024
82. Harvard University, January 2025
83. University of California, Davis, May 2025

Research Grants

(• = current)

Department of Energy

2007–2011	Outstanding Junior Investigator Award *Mathematical Structures in Gauge and String Theory* sole PI, total award $350,000
2011–2013	DE-FG02-91ER40688 (Task A) *Program in Theoretical High Energy Physics* co-PI with A. Jevicki, D. Lowe and C. Tan, total award $462,707
2013–2016	DE-SC0010010 (Task A) *Program in Theoretical High Energy Physics* co-PI with A. Jevicki, D. Lowe and C. Tan, total award $946,241
2016–2019	DE-SC0010010 (Task A) *Program in Theoretical High Energy Physics* co-PI with J. Fan, A. Jevicki, D. Lowe and A. Volovich, total award $1,380,000
2019–2022	DE-SC0010010 (Task A) *Program in Theoretical High Energy Physics* co-PI with J. Fan, A. Jevicki, D. Lowe and A. Volovich, total award $1,444,000
2022–2025	DE-SC0010010 (Task F) *Program in Theoretical High Energy Physics* co-PI with A. Volovich, total award $576,000
• 2025–2028	DE-SC0010010 (Task F) *Program in Theoretical High Energy Physics* co-PI with A. Volovich, total award $720,000

National Science Foundation

2006–2009	PHY-0638520 *String Theory Applications to Particle and Gravitational Physics* sole PI, total award $120,000
2007–2009	PHY-0714747 *Northeast Regional String Theory Conference Program* co-PI with D. Lowe and A. Volovich, total award $5,000

Brown University

2008	Richard B. Salomon Faculty Research Award, $15,000

Teaching

(semester, course, enrollment)

Regular Courses Taught

F 2006	PHYS 2320	Quantum Theory of Fields II	9
F 2007	PHYS 0470	Electricity & Magnetism	29
S 2008	PHYS 2300	Quantum Theory of Fields I	5
F 2008	PHYS 0470	Electricity & Magnetism	28
S 2009	PHYS 2300	Quantum Theory of Fields I	4
F 2009	PHYS 0470	Electricity & Magnetism	45
S 2010	PHYS 2300	Quantum Theory of Fields I	10
F 2010	PHYS 0470	Electricity & Magnetism	47
F 2010	PHYS 2320	Quantum Theory of Fields II	9
F 2011	PHYS 0030	Basic Physics (lecturer)	202
S 2012	PHYS 2040	Classical Theoretical Physics II	21
F 2013	PHYS 0030	Basic Physics (lecturer)	160
S 2014	PHYS 0500	Advanced Classical Mechanics	30
F 2014	PHYS 2320	Quantum Theory of Fields II	8
S 2015	PHYS 0500	Advanced Classical Mechanics	33
F 2015	PHYS 2320	Quantum Theory of Fields II	6
S 2016	PHYS 0500	Advanced Classical Mechanics	37
F 2016	PHYS 2320	Quantum Theory of Fields II	4
S 2017	PHYS 2040	Classical Theoretical Physics II	24
F 2018	PHYS 1970C	String Theory for Undergraduates	10
S 2019	PHYS 2340	Group Theory	18
F 2019	PHYS 0030	Basic Physics (lecturer)	199
S 2020	PHYS 0040	Basic Physics (manager)	166
F 2020	PHYS 2320	Quantum Theory of Fields II	14
S 2021	PHYS 2340	Group Theory	19
F 2021	PHYS 2320	Quantum Theory of Fields II	10
S 2022	PHYS 2040	Classical Theoretical Physics II	38
F 2022	PHYS 0030	Basic Physics (lecturer)	184
S 2023	PHYS 2040	Classical Theoretical Physics II	39
F 2024	PHYS 2030	Classical Theoretical Physics I	32
S 2025	PHYS 2340	Group Theory	27
F 2025	PHYS 2030	Classical Theoretical Physics I	45
S 2026	PHYS 1100/2100	General Relativity	51
F 2026	PHYS 2030	Classical Theoretical Physics I	
S 2027	PHYS 1100/2100	General Relativity	

Graduate Independent Study Courses Directed

F 2006	The AdS/CFT Correspondence	2
S 2007	Black Holes	1
S 2009	Conformal Field Theory	6
F 2009	Modern Methods for Perturbative QFT	6
F 2013	Scattering Amplitudes	1
S 2014	Topics in Quantum Field Theory	8
S 2016	Scattering Amplitudes	1
S 2019	Grassmannian Geometry of Scattering Amplitudes	2
F 2019	Grassmannian Geometry of Scattering Amplitudes	1
S 2022	Grassmannian Geometry of Scattering Amplitudes	2

Service

(certain dates of service redacted to preserve confidentiality)

University

2014–2016	Graduate Council
20[redacted]	Reviewer for Richard B. Salomon Faculty Research Awards

Physics Department Standing Committees

Curriculum Committee	2006-09, Fall 2010, 2016–17, 2020–21
Graduate Admissions Committee	2006-10, 2018–20, 2021–23 (chair), 2025–27
Qualifying Exam Committee	Spring 2008–Fall 2009, Fall 2010, Fall 2011, Spring 2012 (chair), 2018–19 (chair), Spring 2021
Colloquium Committee	2009–10, 2013–15, 2019–20, 2020–21 (chair), 2022-23
Publications and Outreach Committee	Fall 2010
Computer Committee	2011-12, 2013–17, 2019–20 (chair), 2021–22
Honors Coordinator	2014–17
Comprehensive Exam Committee	2024–25 (chair), 2026–27
Sophomore Advisor	2025–26
Concentration Advisor	2026–27
Master's Advisor	2026–27

Other Physics Department Service

2007	Ad Hoc Committee on Introductory Physics Instruction
2009–2010	HET Seminar Organizer
2013–2015	HET Seminar Organizer
2014–2015	Faculty Search Committee
2016	Ad Hoc Committee on Joint Applied Physics PhD Program with Engineering
2016–2017	Department Self-Study Committee
2018	Ad Hoc Committee on Computational Physics
2018–2019	BTPC Executive Committee
2018–2019	BTPC Postdoctoral Search Committee
2019–2021	Mentoring Committee for Prof. Jia Li
2022–2023	Chair, Target of Opportunity Faculty Search Committee

Grant Review Service

20[redacted]	Royal Society University Research Fellowships (UK)
20[redacted]	NSERC Discovery Grant Program (Canada)
20[redacted]	Panelist, DOE High Energy Theory Graduate Fellowship Program
20[redacted]	Panelist, DOE Early Career Program in High Energy Physics
20[redacted]	NSF Program in High Energy Physics
20[redacted]	Swiss National Science Foundation
20[redacted]	Royal Society University Research Fellowships (UK)
20[redacted]	DOE Comparative Review of the University Theory Program
20[redacted]	NSERC Discovery Grant Program (Canada)
20[redacted]	Swiss National Science Foundation
20[redacted]	Israel Science Foundation
20[redacted]	Science and Technology Facilities Council Particle Physics Grants (UK)
20[redacted]	DOE Early Career Program in High Energy Physics
20[redacted]	Engineering and Physical Sciences Research Council Peer Review (UK)
20[redacted]	Panelist, DOE High Energy Physics Comparative Review
20[redacted]	NSF Program in Theoretical Nuclear Physics
20[redacted]	NSF Program in High Energy Physics
20[redacted]	Science and Technology Facilities Council Particle Physics Grants (UK)
20[redacted]	Czech Science Foundation
20[redacted]	European Research Council
20[redacted]	National Science Centre, Poland
20[redacted]	Science and Technology Facilities Council Particle Physics Grants (UK)
20[redacted]	European Research Council

Conferences & Workshops Co-Organized

2006	*New England String Meeting*, Brown University
2007	Session Convener, *Ninth Workshop on Non-Perturbative QCD*, Paris, France
2007	*Second New England String Meeting*, Brown University
2008	*Third New England String Meeting*, Brown University
2011	*Fourth New England String Meeting*, Brown University
2011	*Fifth New England String Meeting*, Brown University
2012	IHES Workshop on *Amplitudes and Periods*, Paris, France
2013	*Amplitudes 2013*, Munich, Germany
2013	Session Convener, *Twelfth Workshop on Non-Perturbative QCD*, Paris
2013	CERN Theory Institute on Amplitudes, Geneva, Switzerland
2014	*Sixth New England String Meeting*, Brown University
2015	MITP Program on *Amplitudes, Motives and Beyond*, Mainz, Germany
2015	*AndyFest: A Celebration of the Science of Andrew Strominger*, Harvard University
2015	*Seventh New England String Meeting*, Brown University
2017	Scientific Committee, *String-Math 2017*, Hamburg, Germany
2018	Scientific Committee, *String-Math 2018*, Sendai, Japan
2019	*Eighth New England String Meeting*, Brown University
2019	Scientific Committee, *String-Math 2019*, Uppsala, Sweden
2020	*Ninth New England String Meeting*, Brown University
2020	Scientific Advisory Committee, *String-Math 2020*, Stellenbosch, South Africa
2023	*Tenth New England String Meeting*, Brown University
2024	*Mathematical Aspects of Scattering Amplitudes*, Harvard University
2024	Scientific Advisory Committee, *Amplitudes 2024*, Institute for Advanced Study
2024	GGI Workshop on *Mathematical Structures in Scattering Amplitudes*, Florence, Italy
2025	*Symbology©15*, Max Planck Institute for Physics, Garching bei München, Germany

Outreach

2002	Presentation at AT&T Research Headquarters
2006	Presentation to the Brown Physics Department Undergraduate Group
2010	Brown Physics Department Faculty Colloquium
2011	Presentation to the Brown Physics Department Undergraduate Group
2013	Presentation to Brown Physics Department Staff
2021	Rhode Island Science and Engineering Fair Judge
2022	Brown PREP (Promoting Representation and Equality in Physics) Program

Students

PhD Students

2011	Georgios Papathanasiou *Solitons and Spin Chains in Gauge/String Dualities*
2011	Dung Nguyen *Aspects of Scattering Amplitudes: Symmetry and Duality*
2015	John Golden *Cluster Polylogarithms and Scattering Amplitudes*
2017	Thomas Harrington *Cluster Bootstrap in $\mathcal{N} = 4$ Super-Yang-Mills Scattering Amplitudes*
2019	Igor Prlina *Landau Singularities in Planar Massless Theories*
2020	Stefan Stanojevic *Landau Singularities and Positive Geometries*
2023	Luke Lippstreu *Scattering Amplitudes in $\mathcal{N} = 4$ SYM, and the Infrared Structure of Gauge Theories*
2024	Rishabh Bhardwaj *From Celestial Amplitudes to Twisted Cohomolgy: New Perspectives on Quantum Scattering*
2028 (exp.)	He-Chen Weng

PhD Student Thesis Examination Committees

2007	Aristomenis Donos
2008	Daniel Ferrante
2010	Shubho Roy
2010	Marko Djurić
2015	Tutanon Sinthuprasith
2016	Timothy Raben
2019	External Referee for Giulio Salvatori, University of Milan
2020	External Referee for Jack Foster, University of Southampton
2022	Yangrui Hu
2022	Sze Ning Hazel Mak
2023	Aleksander Cianciara
2024	Xianlong Liu

PhD Student Preliminary Examination Committees

2006	Michael Abbott
2007	Cengiz Pehlevan
2008	Shubho Roy
2008	Kewang Jin
2010	Michael Segala
2010	Juliette Alimena
2019	Sze Ning Mak
2020	Yangrui Hu
2021	Aleksander Cianciara
2022	Xianlong Liu
2023	Raluca Vlad (Brown Department of Mathematics)
2025	Juanyi Yang
2026	Rishabh Jain
2026	Jacob Kuntzleman

Undergraduate Honors Theses Supervised

2007–2008	Taylor H. Newton '08 *Lie Algebras and* $\mathcal{N} = 4$ *Yang-Mills Theory*
2009–2011	Alexander DiRe '11 *Scattering Amplitudes in* $\mathcal{N} = 4$ *SYM and* $\mathcal{N} = 8$ *SUGRA*
2010–2011	Edward Parker '11 *Leading Singularities of Low-Loop Diagrams for Four-Particle Scattering in* $\mathcal{N} = 4$ *Supersymmetric Yang-Mills Theory*
2011–2012	Réal Provencher '12 *Symbology of Integrals in Loop-Level Feynman Diagrams*
2012–2015	Adam Scherlis '15 *Triangulations, Polylogarithms and Grassmannian Cluster Algebras in Particle Physics*
2015–2016	Lauren Altman '16 *Scattering Amplitudes of On-Shell Plabic Graphs Resulting in Elliptic Integrals*
2021–2023	Daphne Maniatis '23.5 *Scattering Amplitudes in String Theory: Veneziano and Coon Amplitudes*
2023–2024	Gareth Mansfield '24 *Unitarity for Generalized String Amplitudes*
2025–2026	Justin Kingsnorth '26

Other Undergraduate Research Supervised

2009	Amin Shaikh '11
2009–2011	William Hicks '12
2011	Ryan Zelen '11
2019	Adam Tropper '20
2019	Alex Jacoby '22
2022–2023	Akshay Ghandikota '25
2022–2023	Viola Brockman '23

Masters Theses Supervised

2019–2020	Yuchen Hua '20
2020–2021	Haoming Liu '21
2022–2023	Rongyu Dong '23
2024–2025	Jash Desai '25