

CONTACT INFORMATION	Center for Cosmology and Particle Physics New York University	<i>e-mail:</i> grant.remmen@nyu.edu <i>web:</i> grantremmen.com
POSITIONS	New York University , James Arthur Postdoctoral Fellow University of California, Santa Barbara , Fundamental Physics Fellow Kavli Institute for Theoretical Physics , Postdoctoral Scholar University of California, Berkeley , Miller Research Fellow Harvard University Society of Fellows , Junior Fellow (declined)	2023–present 2020–2023 2017–2020 2017
EDUCATION	California Institute of Technology Ph.D., Physics M.S., Physics Hertz Fellow and NSF Graduate Research Fellow University of Minnesota, College of Science & Engineering B.S., Physics, <i>summa cum laude</i> , High Distinction, 4.0 GPA B.S., Astrophysics, <i>summa cum laude</i> , High Distinction, 4.0 GPA B.S., Mathematics, <i>summa cum laude</i> , High Distinction, 4.0 GPA	2012–2017 June 2017 June 2015 2008–2012 May 2012 May 2012 May 2012
SELECTED HONORS & AWARDS	Appointed as Hertz Fellowship Interviewer Sakurai Dissertation Award in Theoretical Particle Physics American Physical Society award citation: “For his contributions to understanding the structure and self-consistency of gravity and effective field theories using ideas from quantum field theory and holography.” Stemple Memorial Prize in Physics , Caltech United States Delegate to the 66th Lindau Nobel Laureate Meeting Hertz Fellow NSF Graduate Research Fellow , National Science Foundation Goldwater Scholar Chambliss Astronomy Achievement Student Award , American Astronomical Society Dean’s Summer International Student Scholarship , University College London National Merit Scholar Byrd Honors Scholar United States Presidential Scholar , White House Commission on Presidential Scholars & U.S. Dept. of Education	2018–present 2018 2016 2016 2012–2017 2012–2017 2010–2012 2011 2011 2008–2012 2008–2011 2008
SCIENTIFIC & HONORARY AFFILIATIONS	American Physical Society American Astronomical Society International Society on General Relativity and Gravitation Sigma Xi, The Scientific Research Honor Society New York Academy of Sciences Golden Key International Honour Society Sigma Pi Sigma, National Physics Honor Society	

PRESS	Physics World, IOP, Editor's Choice <i>String Theory May Be Inevitable as a Unified Theory of Physics, Calculations Suggest</i>	January 2025
	NYU News <i>Physicists 'Bootstrap' Validity of String Theory</i>	December 2024
	Phys.org <i>Theoretical Study Shows That Kerr Black Holes Could Amplify New Physics</i>	September 2023
	Physics Magazine, APS <i>New Physics Magnified in Spinning Black Holes</i>	August 2023
	The Current, UCSB <i>Quantum Zeta Epiphany</i>	January 2022
	Physics Magazine, APS <i>A Physical Match for the Riemann Zeta Function</i>	December 2021
	Quanta Magazine <i>Black Hole Paradoxes Reveal a Fundamental Link Between Energy and Order</i>	May 2020
PUBLICATIONS	69. Clifford Cheung, Grant N. Remmen , Francesco Sciotti, Michele Tarquini <i>Strings from Almost Nothing</i>	under review, Phys. Rev. Lett. arXiv:2508.09246
	68. Clifford Cheung, Grant N. Remmen <i>Multipositivity Bounds for Scattering Amplitudes</i>	Phys. Rev. D 112 (2025) 016017 arXiv:2505.05553
	67. Ning Bao, Grant N. Remmen <i>Black Hole Complementarity and ER/EPR</i> Honorable Mention, 2025 Awards for Essays on Gravitation, Gravity Research Foundation	accepted for publication, Int. J. Mod. Phys. D arXiv:2503.16610
	66. Nima Arkani-Hamed, Carolina Figueiredo, Grant N. Remmen <i>Open String Amplitudes: Singularities, Asymptotics, and New Representations</i>	JHEP 4 (2025) 39 arXiv:2412.20639
	65. Avik Banerjee, Achilleas P. Porfyriadis, Grant N. Remmen <i>Accidental Symmetry Near Extreme Spinning Black Holes</i>	JHEP 4 (2025) 149 arXiv:2412.19880
	64. Grant N. Remmen , Nicholas L. Rodd <i>Positively Identifying HEFT or SMEFT</i>	under review, Phys. Rev. Lett. arXiv:2412.07827
	63. Gauthier Durieux, Grant N. Remmen , Nicholas L. Rodd et al. <i>LHC EFT WG Note: Basis for Anomalous Quartic Gauge Couplings</i>	SciPost Phys. Comm. Rep. 6 (2025) arXiv:2411.02483
	62. Clifford Cheung, Aaron Hillman, Grant N. Remmen <i>Uniqueness Criteria for the Virasoro-Shapiro Amplitude</i>	Phys. Rev. D 111 (2025) 086034 arXiv:2408.03362
	61. Clifford Cheung, Aaron Hillman, Grant N. Remmen <i>Bootstrap Principle for the Spectrum and Scattering of Strings</i>	Phys. Rev. Lett. 133 (2024) 251601 arXiv:2406.02665
	60. Gary T. Horowitz, Maciej Kolanowski, Grant N. Remmen , Jorge E. Santos <i>Sudden Breakdown of Effective Field Theory Near Cool Kerr-Newman Black Holes</i>	JHEP 5 (2024) 122 arXiv:2403.00051
	59. Rafael Aoude, Gilly Elor, Grant N. Remmen , Olcyr Sumensari <i>Positivity in Amplitudes from Quantum Entanglement</i>	under review, Fortschr. Phys. arXiv:2402.16956
	58. Nima Arkani-Hamed, Clifford Cheung, Carolina Figueiredo, Grant N. Remmen <i>Multiparticle Factorization and the Rigidity of String Theory</i>	Phys. Rev. Lett. 132 (2024) 091601 arXiv:2312.07652
	57. Aidan Chatwin-Davies, Pompey Leung, Grant N. Remmen <i>Holographic Screen Sequestration</i>	Phys. Rev. D 109 (2024) 046003 arXiv:2312.06750

- PUBLICATIONS, CONTINUED
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| <p>56. Xi Dong, Grant N. Remmen, Diandian Wang, Wayne W. Weng, Chih-Hung Wu
<i>Holographic Entanglement from the UV to the IR</i></p> <p>55. Clifford Cheung, Grant N. Remmen
<i>Bespoke Dual Resonance</i></p> <p>54. Gary T. Horowitz, Maciej Kolanowski, Grant N. Remmen, Jorge E. Santos
<i>Extremal Kerr Black Holes as Amplifiers of New Physics</i></p> <p>53. Clifford Cheung, Grant N. Remmen
<i>Stringy Dynamics from an Amplitudes Bootstrap</i></p> <p>52. Achilleas P. Porfyriadis, Grant N. Remmen
<i>Charged Dilatonic Spacetimes in String Theory</i></p> <p>51. Clifford Cheung, Grant N. Remmen
<i>Veneziano Variations: How Unique are String Amplitudes?</i></p> <p>50. Marat Freytsis, Soubhik Kumar, Grant N. Remmen, Nicholas L. Rodd
<i>Multifield Positivity Bounds for Inflation</i></p> <p>49. Juan Maldacena, Grant N. Remmen
<i>Accumulation-Point Amplitudes in String Theory</i></p> <p>48. Grant N. Remmen, Nicholas L. Rodd
<i>Spinning Sum Rules for the Dimension-Six SMEFT</i></p> <p>47. Yu-tin Huang, Grant N. Remmen
<i>UV-Complete Gravity Amplitudes and the Triple Product</i></p> <p>46. Achilleas P. Porfyriadis, Grant N. Remmen
<i>Large Diffeomorphisms and Accidental Symmetry of the Extremal Horizon</i></p> <p>45. Grant N. Remmen
<i>Exploration of a Singular Fluid Spacetime</i></p> <p>44. Nima Arkani-Hamed, Yu-tin Huang, Jin-Yu Liu, Grant N. Remmen
<i>Causality, Unitarity, and the Weak Gravity Conjecture</i></p> <p>43. Grant N. Remmen
<i>Amplitudes and the Riemann Zeta Function</i></p> <p>42. Achilleas P. Porfyriadis, Grant N. Remmen
<i>Horizon Acoustics of the GHS Black Hole and the Spectrum of AdS_2</i></p> <p>41. Ning Bao, Aidan Chatwin-Davies, Grant N. Remmen
<i>Entanglement Wedge Cross Section Inequalities from Replicated Geometries</i></p> <p>40. Ning Bao, Jonathan Harper, Grant N. Remmen
<i>Holevo Information of Black Hole Mesostates</i></p> <p>39. Grant N. Remmen, Nicholas L. Rodd
<i>Signs, Spin, SMEFT: Sum Rules at Dimension Six</i></p> <p>38. Rafael Aoude et al. (including Grant N. Remmen)
<i>On-Shell Methods for the SMEFT</i></p> <p>37. Ning Bao, Aidan Chatwin-Davies, Grant N. Remmen
<i>Warping Wormholes with Dust: a Metric Construction of the Python's Lunch</i></p> | <p>JHEP 11 (2023) 207
arXiv:2308.07952</p> <p>Phys. Rev. D 108 (2023) 086009
arXiv:2308.03833</p> <p>Phys. Rev. Lett. 131 (2023) 091402
Editors' Suggestion
arXiv:2303.07358</p> <p>Phys. Rev. D 108 (2023) 026011
arXiv:2302.12263</p> <p>JHEP 3 (2023) 125
arXiv:2301.08256</p> <p>JHEP 1 (2023) 122
arXiv:2210.12163</p> <p>JHEP 9 (2023) 41
arXiv:2210.10791</p> <p>JHEP 8 (2022) 152
arXiv:2207.06426</p> <p>JHEP 9 (2022) 30
arXiv:2206.13524</p> <p>Phys. Rev. D 106 (2022) L021902
arXiv:2203.00696</p> <p>JHEP 3 (2022) 107
arXiv:2112.13853</p> <p>Gen. Rel. Grav. 53 (2021) 101
arXiv:2111.08713</p> <p>JHEP 3 (2022) 83
arXiv:2109.13937</p> <p>Phys. Rev. Lett. 127 (2021) 241602
Editors' Suggestion
arXiv:2108.07820</p> <p>JHEP 10 (2021) 142
arXiv:2106.10282</p> <p>JHEP 7 (2021) 113
arXiv:2106.02640</p> <p>Phys. Rev. D 105 (2022) 026010
arXiv:2103.06888</p> <p>Phys. Rev. D 105 (2022) 036006
arXiv:2010.04723</p> <p>Snowmass 2021 Letter of Interest</p> <p>JHEP 9 (2020) 102
arXiv:2006.10762</p> |
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- PUBLICATIONS, 36. **Grant N. Remmen**, Nicholas L. Rodd
CONTINUED *Flavor Constraints from Unitarity and Analyticity* Phys. Rev. Lett. **125** (2020) 081601
arXiv:2004.02885
35. Clifford Cheung, **Grant N. Remmen**
Entanglement and the Double Copy JHEP **5** (2020) 100
arXiv:2002.10470
34. Ning Bao, Aidan Chatwin-Davies, Jason Pollack, **Grant N. Remmen**
Cosmological Decoherence from Thermal Gravitons JHEP **8** (2020) 65
arXiv:1911.10207
33. **Grant N. Remmen**, Nicholas L. Rodd
Consistency of the Standard Model Effective Field Theory JHEP **12** (2019) 32
arXiv:1908.09845
32. Ning Bao, Aidan Chatwin-Davies, Jason Pollack, **Grant N. Remmen**
Towards a Bit Threads Derivation of Holographic Entanglement of Purification JHEP **7** (2019) 152
arXiv:1905.04317
31. Clifford Cheung, Junyu Liu, **Grant N. Remmen**
Entropy Bounds on Effective Field Theory from Rotating Dyonic Black Holes Phys. Rev. D **100** (2019) 046003
arXiv:1903.09156
30. Raphael Bousso, Yasunori Nomura, **Grant N. Remmen**
Outer Entropy and Quasilocal Energy Phys. Rev. D **99** (2019) 046002
arXiv:1812.06987
29. Ning Bao, Aidan Chatwin-Davies, **Grant N. Remmen**
Entanglement of Purification and Multiboundary Wormhole Geometries JHEP **2** (2019) 110
arXiv:1811.01983
28. **Grant N. Remmen**
New Spacetimes for Rotating Dust in (2+1)-Dimensional General Relativity Phys. Rev. D **98** (2018) 124008
arXiv:1810.12305
27. Ning Bao, Aidan Chatwin-Davies, Jason Pollack, **Grant N. Remmen**
Traversable Wormholes as Quantum Channels: Exploring CFT Entanglement Structure and Channel Capacity in Holography JHEP **11** (2018) 71
arXiv:1808.05963
26. Yasunori Nomura, **Grant N. Remmen**
Area Law Unification and the Holographic Event Horizon JHEP **8** (2018) 63
arXiv:1805.09339
25. Venkatesa Chandrasekaran, **Grant N. Remmen**, Arvin Shahbazi-Moghaddam
Higher-Point Positivity JHEP **11** (2018) 15
arXiv:1804.03153
24. Clifford Cheung, Junyu Liu, **Grant N. Remmen**
Proof of the Weak Gravity Conjecture from Black Hole Entropy JHEP **10** (2018) 4
arXiv:1801.08546
23. Ning Bao, Sean M. Carroll, Aidan Chatwin-Davies, Jason Pollack, **Grant N. Remmen**
Branches of the Black Hole Wave Function Need Not Contain Firewalls Phys. Rev. D **97** (2018) 126014
arXiv:1712.04955
22. Chris Akers, Raphael Bousso, Illan F. Halpern, **Grant N. Remmen**
Boundary of the Future of a Surface Phys. Rev. D **97** (2018) 024018
arXiv:1711.06689
21. Clifford Cheung, **Grant N. Remmen**, Chia-Hsien Shen, Congkao Wen
Pions as Gluons in Higher Dimensions JHEP **4** (2018) 129
arXiv:1709.04932
20. Clifford Cheung, **Grant N. Remmen**
Hidden Simplicity of the Gravity Action JHEP **9** (2017) 2
arXiv:1705.00626
19. Sean M. Carroll, **Grant N. Remmen**
A Nonlocal Approach to the Cosmological Constant Problem Phys. Rev. D **95** (2017) 123504
arXiv:1703.09715
18. Ning Bao, **Grant N. Remmen**
Bulk Connectedness and Boundary Entanglement EPL **121** (2018) 60007, Editor's Choice
arXiv:1703.00018

- PUBLICATIONS, 17. Clifford Cheung, **Grant N. Remmen**
CONTINUED *Twofold Symmetries of the Pure Gravity Action* JHEP **1** (2017) 104
arXiv:1612.03927
16. Clifford Cheung, **Grant N. Remmen**
Positivity of Curvature-Squared Corrections in Gravity Phys. Rev. Lett. **118** (2017) 051601
arXiv:1608.02942
15. **Grant N. Remmen**, Ning Bao, Jason Pollack
*Entanglement Conservation, ER = EPR,
and a New Classical Area Theorem for Wormholes* JHEP **7** (2016) 48
arXiv:1604.08217
14. Sean M. Carroll, **Grant N. Remmen**
What is the Entropy in Entropic Gravity? Phys. Rev. D **93** (2016) 124052
arXiv:1601.07558
13. Clifford Cheung, **Grant N. Remmen**
Positive Signs in Massive Gravity JHEP **4** (2016) 2
arXiv:1601.04068
12. Ning Bao, Jason Pollack, **Grant N. Remmen**
*Wormhole and Entanglement (Non-)Detection
in the ER = EPR Correspondence* JHEP **11** (2015) 126
arXiv:1509.05426
11. Brando Bellazzini, Clifford Cheung, **Grant N. Remmen**
Quantum Gravity Constraints from Unitarity and Analyticity Phys. Rev. D **93** (2016) 064076
arXiv:1509.00851
10. Ning Bao, Jason Pollack, **Grant N. Remmen**
*Splitting Spacetime and Cloning Qubits:
Linking No-Go Theorems across the ER = EPR Duality* Fortschr. Phys. **63** (2015) 705
arXiv:1506.08203
9. Ning Bao, ChunJun Cao, Sean M. Carroll, Aidan Chatwin-Davies, Nicholas Hunter-Jones, Jason Pollack, **Grant N. Remmen**
Consistency Conditions for an AdS Multiscale Entanglement Renormalization Ansatz Correspondence Phys. Rev. D **91** (2015) 125036
arXiv:1504.06632
8. Clifford Cheung, **Grant N. Remmen**
Infrared Consistency and the Weak Gravity Conjecture JHEP **12** (2014) 87
arXiv:1407.7865
7. **Grant N. Remmen**, Sean M. Carroll
How Many e-Folds Should We Expect from High-Scale Inflation? Phys. Rev. D **90** (2014) 063517
arXiv:1405.5538
6. Clifford Cheung, **Grant N. Remmen**
Naturalness and the Weak Gravity Conjecture Phys. Rev. Lett. **113** (2014) 051601
arXiv:1402.2287
5. **Grant N. Remmen**, Sean M. Carroll
Attractor Solutions in Scalar-Field Cosmology Phys. Rev. D **88** (2013) 083518
arXiv:1309.2611
4. **Grant N. Remmen**, Kris Davidson, Andrea Mehner
Unexpected Ionization Structure in Eta Carinae’s “Weigelt Knots” Astrophys. J. **773** (2013) 27
arXiv:1302.2659
3. **Grant N. Remmen**, Kinwah Wu
*Complex Orbital Dynamics of a Double Neutron Star System
Revolving around a Massive Black Hole* Mon. Not. R. Astron. Soc. **430** (2013) 1940
arXiv:1301.2836
2. **Grant Remmen**, Elwood McCreary
Measurement of the Speed and Energy Distribution of Cosmic Ray Muons JURP **25** (2012)
1. **Grant Remmen**
A New Assessment of Dark Matter in the Milky Way Galaxy JURP **23** (2010)

TALKS

- Carnegie Mellon University | High Energy Physics Theory Seminar October 2025
- City College, CUNY | High Energy Seminar October 2025
- Stanford University | LITP Colloquium October 2025
- University of Rhode Island | Physics Colloquium September 2025

TALKS, CONTINUED	Lawrence Berkeley National Laboratory Particle Seminar New York University, CCPP High Energy Physics Seminar CERN TH Institute on Positivity, Amplitudes, and Phenomenology CERN Yale University High Energy Particle Theory Seminar Institute for Advanced Study Amplitudes Group Meeting Ohio State University Physics Department Colloquium What is Particle Theory? Program Kavli Institute for Theoretical Physics UC Davis, QMAP Fields, Strings, Gravity Seminar (virtual) Texas A&M University Physics Department Colloquium Texas A&M University High Energy Physics Seminar Durham University, UK Amplitudes and Correlators Seminar (virtual) Northeastern University High Energy Theory Seminar (virtual) CERN ATLAS Electroweak Working Group Meeting (virtual) Solvay Workshop on Near-Extremal Black Holes International Solvay Institutes and ULB, Brussels, Belgium Modern Trends in Gravity and Black Holes Workshop University of Crete, Greece Harvard University Swampland Seminar Surveying the Landscape Workshop University of Massachusetts Amherst, ACFI Johns Hopkins University High Energy Physics Theory Seminar Particle Theory Initiative, What is String Theory? Program Kavli Institute for Theoretical Physics California Institute of Technology High Energy Theory Seminar University of Wisconsin–Madison Theory Seminar University of Pennsylvania High Energy Theory Seminar Columbia University Theory Seminar University of Washington Particle Theory Seminar Crete Center for Theoretical Physics High Energy Seminar (virtual) New York University, CCPP Brown Bag Seminar Boston University High Energy Theory Seminar Swamplandia Workshop Instituto de Física Teórica, UAM-CSIC, and Harvard University, Madrid, Spain Amplitudes 2023 CERN Strings 2023 Perimeter Institute for Theoretical Physics Kavli Institute for Theoretical Physics Generalized Symmetries Reading Group Quark Confinement 2023 University of Minnesota Simons Collaboration on Confinement and QCD Strings Kavli Institute for Theoretical Physics Locals' Lunch Talk CERN Standard Model Electroweak Group Meeting, ATLAS Collaboration (virtual) McGill University High Energy Theory Group Meeting (virtual)	September 2025 September 2025 April 2025 April 2025 March 2025 February 2025 February 2025 February 2025 January 2025 January 2025 December 2024 November 2024 September 2024 September 2024 June 2024 May 2024 April 2024 April 2024 March 2024 March 2024 February 2024 January 2024 January 2024 November 2023 November 2023 October 2023 September 2023 September 2023 August 2023 July 2023 June 2023 May 2023 April 2023 April 2023 April 2023
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TALKS, CONTINUED	University of Chicago, Kadanoff Center for Theoretical Physics Particle Theory Seminar	April 2023
	Princeton University High Energy Theory Seminar	March 2023
	California Amplitudes Meeting UC San Diego	March 2023
	University of Michigan, LCTP High Energy Theory Seminar (two parts)	March 2023
	Indiana University High-Energy Physics/Astrophysics Seminar	March 2023
	California Institute of Technology Amplitudes Group Meeting	February 2023
	Bootstrapping Quantum Gravity Program Kavli Institute for Theoretical Physics	February 2023
	Stony Brook University, Simons Center for Geometry and Physics Special Physics Seminar	February 2023
	UC Davis, QMAP Particles/Cosmology Seminar	January 2023
	Brown University High Energy Theory Seminar (virtual)	November 2022
	Number Theory and Physics Workshop Simons Center for Geometry and Physics, Stony Brook University (virtual)	October 2022
	Institute for Advanced Study Amplitudes Group Meeting	October 2022
	Simons Symposium on Amplitudes Meet Cosmology Scotland	May 2022
	UC Santa Barbara High Energy and Gravity Seminar	May 2022
	Possible and Impossible in Effective Field Theory: From the S-Matrix to the Swampland Workshop Institute for Advanced Study	May 2022
	Argonne National Laboratory High Energy Physics Theory Seminar (virtual)	April 2022
	Kavli IPMU, Univ. Tokyo Mathematics - String Theory Seminar (virtual)	April 2022
	California Amplitudes Meeting UC Davis	March 2022
	California Institute of Technology Amplitudes Group Meeting	February 2022
	UC Irvine Particle Physics Seminar	January 2022
	QCD Meets Gravity Workshop UCLA (virtual)	December 2021
	Kavli Institute for Theoretical Physics Locals' Event	November 2021
	UC Santa Barbara High Energy and Gravity Seminar (virtual)	November 2021
	International Centre for Theoretical Physics High Energy, Cosmology, and Astroparticle Physics Seminar (virtual)	November 2021
	Brandeis University Quantum/Gravity Seminar (virtual)	November 2021
	ETH Zürich QFT, Strings and Beyond Seminar (virtual)	October 2021
	Perimeter Institute Quantum Fields and Strings Seminar (virtual)	October 2021
	Hertz Foundation Innovation Hour (virtual)	June 2021
	California Amplitudes Meeting UCLA (virtual)	March 2021
	New York University Physics Department Colloquium (virtual)	March 2021
	New York University Physics Research Seminar (virtual)	February 2021
	University of Florida High Energy Physics Seminar (virtual)	January 2021
	University of Chicago Particle Theory Seminar (virtual)	January 2021
	Korea Institute for Advanced Study High Energy Physics Seminar (virtual) Seoul, South Korea	December 2020

TALKS, CONTINUED	UC Santa Barbara High Energy and Gravity Seminar (virtual)	November 2020
	Yale University Particle Theory Seminar (virtual)	October 2020
	Brookhaven National Laboratory High Energy Theory Seminar (virtual)	April 2020
	Kavli IPMU, Univ. Tokyo Astronomy-Cosmology-Particle Physics Seminar (virtual)	April 2020
	UC Davis, QMAP Fields, Strings, Gravity Seminar (virtual)	April 2020
	The String Swampland and Quantum Gravity Constraints on Effective Theories Program Kavli Institute for Theoretical Physics	March 2020
	Brandeis University High-Energy and Gravitational Theory Chalk Talk	January 2020
	Brandeis University Physics Department Colloquium	January 2020
	University of Michigan, LCTP High Energy Theory Seminar	November 2019
	From Scattering to Expansion Workshop Northwestern University	October 2019
	UC Santa Barbara Particle Physics Phenomenology Seminar	October 2019
	UC Santa Barbara High Energy and Gravity Seminar	October 2019
	Navigating the Swampland Workshop Instituto de Física Teórica, UAM-CSIC, Madrid, Spain	September 2019
	University of Washington AdS/CFT Group Meeting	May 2019
	University of Washington Particle Theory Seminar	May 2019
	University of Minnesota, FTPI High Energy Theory Seminar	April 2019
	Stanford University Stanford Institute for Theoretical Physics Colloquium	April 2019
	UC Berkeley 4D Seminar	April 2019
	California Institute of Technology High Energy Theory Seminar	February 2019
	UC Davis Joint Theory Seminar	January 2019
	Harvard University Black Hole Initiative Colloquium	November 2018
	Cornell University Particle Theory Seminar	October 2018
	Institute for Advanced Study High Energy Theory Seminar	October 2018
	Vistas over the Swampland Workshop Instituto de Física Teórica, UAM-CSIC, Madrid, Spain	September 2018
	King's College London Special Seminar, Theoretical Particle Physics & Cosmology	June 2018
	Gravity, Cosmology & Physics Beyond the Standard Model Conference LPNHE, UPMC, Paris, France	June 2018
	Sakurai Thesis Prize Talk American Physical Society April Meeting, Columbus, OH <i>Quantum Gravity Constraints for Effective Field Theories</i>	April 2018
	University of Illinois, Urbana-Champaign Mathematical and Theoretical Physics Seminar	April 2018
	McGill University High Energy Theory Group Seminar (virtual)	March 2018
	California Institute of Technology High Energy Theory Seminar	February 2018
	California Institute of Technology Quantum Spacetime Meeting	February 2018
	UC Berkeley String Seminar	February 2018
	Stanford University Stanford Institute for Theoretical Physics Seminar	January 2018

TALKS, CONTINUED	SLAC National Accelerator Laboratory Elementary Particle Physics Theory Seminar	October 2017
	Institute for Advanced Study High Energy Theory Seminar	October 2017
	Massachusetts Institute of Technology String/Gravity Theory Seminar	May 2017
	California Institute of Technology Theoretical Physics Research Group Meeting	April 2017
	California Institute of Technology Theoretical Physics Journal Club	April 2017
	UC Berkeley String Seminar	February 2017
	QCD Meets Gravity Workshop UCLA	December 2016
	California Institute of Technology Theoretical Physics Research Group Meeting	November 2016
	California Institute of Technology Theoretical Physics Research Group Meeting	October 2016
	Johns Hopkins University High Energy Theory/Cosmology Seminar	October 2016
	California Institute of Technology Theoretical Physics Research Group Meeting	May 2016
	New York University High Energy Seminar	April 2016
	Harvard University Particle Theory Seminar	April 2016
	California Institute of Technology Theoretical Physics Research Group Meeting	February 2016
	California Institute of Technology Theoretical Physics Research Group Meeting	November 2015
	California Institute of Technology Theoretical Physics Journal Club	October 2015
	California Institute of Technology Theoretical Physics Research Group Meeting	April 2015
	California Institute of Technology Theoretical Physics Research Group Meeting	February 2015
	California Institute of Technology Theoretical Physics Research Group Meeting	October 2014
	California Institute of Technology Theoretical Physics Journal Club (two parts)	October 2014
	20 th International Symposium on Particles, Strings and Cosmology (PASCOS 2014) Warsaw, Poland	June 2014
	California Institute of Technology Theoretical Physics Research Group Meeting	May 2014
	California Institute of Technology Theoretical Physics Journal Club	February 2014
	California Institute of Technology Theoretical Physics Research Group Meeting	February 2014
	California Institute of Technology Theoretical Physics Journal Club	September 2013
	Hertz Foundation 50 th Anniversary Symposium Poster Presentation	August 2013
	American Physical Society April Meeting, Denver, CO	April 2013
	Mullard Space Science Laboratory, United Kingdom Theory Group Meeting	August 2011
	Dean's Summer International Student Day of Talks University College London, United Kingdom	August 2011
	217 th Meeting of the American Astronomical Society, Seattle, WA Poster Presentation	January 2011
SEMINAR ORGANIZATION	Organizer KITP Locals' Event Series	2022–2023
	Organizer UC Santa Barbara High Energy and Gravity Seminar Series	2020–2021
	Organizer UC Berkeley HEP-QIS Seminar Series	2018–2019
	Organizer UC Berkeley String Seminar Series	2017–2019

CONFERENCE Conference Co-Chair | Kavli Institute for Theoretical Physics (virtual)
 ORGANIZATION *UV Meets the IR: Effective Field Theory Bounds from QFT to String Theory*

October 2020

THESES	Ph.D., Physics California Institute of Technology Grant Newton Remmen <i>Defining Gravity: Effective Field Theory, Entanglement, and Cosmology</i> Thesis advisors: Clifford Cheung and Sean M. Carroll, California Institute of Technology	Defended May 2017
	B.S., Mathematics , <i>summa cum laude</i> University of Minnesota Grant N. Remmen <i>Dynamics of a Rigid Spinning Ring in the Schwarzschild Metric: A Solution to a Gravitational Problem in Mathematical Physics</i> Thesis advisor: Willard Miller, School of Mathematics, University of Minnesota Research supervised by Kinwah Wu, Head of Theory, Mullard Space Science Laboratory, University College London.	Defended May 2012
	B.S., Astrophysics , <i>summa cum laude</i> University of Minnesota Grant N. Remmen <i>Hubble Space Telescope Subpixel Modeling of Anomalous High-Excitation Emission Lines in the Ejecta of Eta Carinae</i> Thesis advisor: Kris Davidson, MN Institute for Astrophysics, University of Minnesota	Defended December 2011
	B.S., Physics , <i>summa cum laude</i> University of Minnesota Grant Remmen <i>Distortion of Black Holes caused by Motion relative to the Cosmic Microwave Background</i> Thesis advisor: Robert Gehrz, Director, MN Institute for Astrophysics, University of Minnesota	Defended April 2010
TEACHING EXPERIENCE	UC Santa Barbara, Department of Physics Instructor and organizer of graduate short course <i>Impossible Physics: Constraining the Laws of Nature, from Scattering Amplitudes to Black Holes</i>	Fall 2020
	UC Berkeley, Department of Physics Guest lecturer in Prof. Petr Hořava's Quantum Field Theory course	April 2018
	University of Minnesota, Institute of Technology, Department of Astronomy Teaching assistant to Prof. Robert Gehrz, Department Chair	Fall 2009
UNDERGRAD. AWARDS, UNIVERSITY OF MINNESOTA	Hagstrum Award in Physics Outstanding Graduate in Mathematics Franklin Scholarship in Physics Lando Scholarship in Mathematics Richards Scholarship in Mathematics Nier Scholarship in Physics Thorp Scholarship in Mathematics Undergraduate Research Scholarship Basford Award in Physics Institute of Technology Alumni Award Institute of Technology Honors Undergraduate Research Scholarship Maroon & Gold Leadership Award 3M/Alumni Award Bentson Scholar Dean's List , College of Science & Engineering/Institute of Technology McGraw Hill Student Achievement Recognition , Meritorious Work in General Chemistry	2012 2012 2011–2012 2011–2012 2011–2012 2010–2011 2010–2011 2010 2009–2010 2009–2010 2009 2008–2012 2008–2012 2008–2012 2008–2012 2008

JOURNAL	Physical Review Letters	
REFEREE	Physical Review D	
	Journal of High Energy Physics	
	Nuclear Physics B	
	Scientific Reports - Nature	
	Communications in Mathematical Physics	
SCIENCE OUTREACH	Outreach talk, <i>Quantum Field Theory is the Language of Theoretical Physics</i> KITP Teachers' Conference: "This is Particle Theory"	February 2025
	Interacted with various major donors at the request of KITP	2022–2023
	Outreach talk for KITP administrative staff	May 2021
	Guest lecturer for Caltech's <i>Storytelling for Scientists</i> course	April 2021
	Presented talks on dark matter to physics classes in rural Minnesota	2011
LEADERSHIP, SERVICE, & CULTURAL ACTIVITIES	Co-author/-composer of a two-act musical, <i>From the Earth to the Moon</i> , based on the Verne novel Caltech production of <i>From the Earth to the Moon</i> Mainstage production, Assistant to the Director	2022
	Public reading (virtual), Music Director	2021
	California Institute of Technology Graduate Student Council Board of Directors	2013–2017
	Member, Academics Committee and Director at Large	2016–2017
	Member, Academics Committee and Physics Representative	2013–2016
	California Institute of Technology Faculty Library Committee, Student Representative	2013–2017
	Co-author/-composer of a two-act musical, <i>Boldly Go!</i> , a musical parody based upon <i>Star Trek</i> Caltech production of <i>Boldly Go!</i>	
	Mainstage production, Music Director	2016
	Public reading, Music Director	2015
	University Study Abroad May Seminar: <i>Great Minds of the Renaissance</i> , Italy History of Renaissance scientists (Galileo, da Vinci, etc.) and societal context	2011
	University of Minnesota Gospel Choir	2008–2010
	Detroit Lakes Community Summer Band Program	2008–2010
	University of Minnesota Honors Student Association	2008–2012
	University of Minnesota volunteer caller for Admissions Office	2008–2009
	U.S. Department of Education volunteer Assembled hygiene kits for Washington, D.C. homeless	2008
TEST SCORES	GRE Physics—Perfect Score: 990/990	2011
	GRE General—Quantitative: 800/800, Verbal: 720/800, Analytical Writing: 5.5/6.0	2011
	SAT—Perfect Score: 2400/2400	2008
	SAT II—Perfect Scores: Math Level II 800/800 and Biology—Molecular 800/800	2008