

# Jared Kaplan

Associate Professor  
Department of Physics & Astronomy  
Johns Hopkins University

<b>Appointments</b>	JOHNS HOPKINS UNIVERSITY	
	Associate Professor	2018 - present
	Assistant Professor	2012 - 2018
	STANFORD INSTITUTE FOR THEORETICAL PHYSICS	9/2017 - 12/2017
	Visiting Professor	
	UC DAVIS DEPARTMENT OF PHYSICS	1/2018 - 6/2018
	Visiting Professor	
<b>Professional Preparation</b>	STANFORD UNIVERSITY	2012 - 2013
	Postdoctoral Fellow	
	SLAC NATIONAL ACCELERATOR LABORATORY	2009 - 2012
	Research Associate	
	HARVARD UNIVERSITY	2005 - 2009
	Ph.D. in Physics	
	Advisor: Nima Arkani-Hamed	
	STANFORD UNIVERSITY	2001 - 2005
	B.S. in Physics and Mathematics	
<b>Honors</b>	Simons Collaboration on the Non-Perturbative Bootstrap	2016-2020
	NSF CAREER Grant	2015-2020
	Johns Hopkins Catalyst Award	2016-2017
	Alfred P. Sloan Research Fellow	2014-2016
	Kavli Fellow (Frontiers of Science)	2016
	Hertz Foundation Graduate Fellowship	2005-2009
	National Science Foundation Graduate Research Fellowship	2005-2008
	James Mills Pierce Fellowship, Harvard	2005
	United States Physics Team	2001
<b>Current Support</b>	Agency: Simons Foundation	
	Title: Simons Collaboration on the Non-Perturbative Bootstrap	
	Award Dates: 9/1/2016 - 8/31/2020	
	Total Award Amount (local per PI): \$480,000	
	Agency: NSF	
	Title: CAREER: Conformal Field Theory and Quantum Gravity from the Bottom-Up	
Award Number: PHY-1454083		
Award Dates: 9/1/2015 - 8/31/2020		
Total Award Amount: \$400,000		
<b>PhD Students</b>	H. Chen, N. Anand (2018), C. Hussong (2018), S. Cantrell (2015)	

**Postdocs** Sandipan Kundu, Ethan Dyer (Google 2018–), Daliang Li (Harvard 2018–), Junpu Wang (Yale 2016–)

**Synergistic activities** Organizer of “Quantum Gravity and the Bootstrap” Conference at JHU  
Co-organizer for Simons Non-Perturbative Bootstrap Workshops  
Co-organizer of Johns Hopkins Workshops in Theoretical Physics  
Referee for peer-reviewed journals: Journal of High Energy Physics, Physical Review D

## Invited Talks

- **(2017-18) The Exact AdS<sub>3</sub> Propagator and the Fate of Locality**  
Simons Bootstrap Conference  
New York University  
ICTS Bangalore  
Tata Institute Mumbai  
Caltech  
UC Davis  
University of British Columbia
- **(2017) The Information Paradox and Two Dimensional CFT**  
Conference “Strings 2017”, Tel Aviv  
Niels Bohr Institute Copenhagen  
UC Berkeley  
Stanford University  
KITP Conference “Resurgent Asymptotics in Physics and Mathematics”
- **(2016) On Information Loss in Two Dimensional CFT**  
Institute for Advanced Study Princeton  
Cornell University  
University of Kentucky  
McGill University  
CERN  
Stanford University  
UC Berkeley  
UC Santa Barbara
- **(2015) What is the Temperature of a Pure State?**  
Columbia University  
Caltech  
YITP-KIAS Joint workshop on “Geometry and Strings”  
University of Minnesota
- **(2015) Virasoro Conformal Blocks and Thermalities**  
Princeton University  
Aspen Winter Conference on “Progress and Applications of Quantum Field Theory”  
Aspen Summer Workshop  
Stony Brook Simons Summer Workshop
- **(2014) Universality of Long Distance AdS Physics from the CFT Bootstrap**  
Conference “QFT Beyond Perturbation Theory” at Kavli Institute for Theoretical Physics  
New York University  
Columbia University  
Boston University  
Seoul National University  
Conference on “Back to the Bootstrap”

## Publication List

Jared Kaplan

46. **“The AdS<sub>3</sub> Propagator and the Fate of Locality”**  
H. Chen, A. L. Fitzpatrick, J. Kaplan and D. Li.  
arXiv:1712.02351 [hep-th]  
Submitted to JHEP
45. **“An Exact Operator That Knows Its Location”**  
N. Anand, H. Chen, A. L. Fitzpatrick, J. Kaplan and D. Li.  
arXiv:1708.04246 [hep-th]  
Submitted to JHEP
44. **“A Numerical Approach to Virasoro Blocks and the Information Paradox”**  
H. Chen, C. Hussong, J. Kaplan and D. Li.  
arXiv:1703.09727 [hep-th]  
DOI:10.1007/JHEP09(2017)102  
JHEP **1709**, 102 (2017)
43. **“Exact Virasoro Blocks from Wilson Lines and Background-Independent Operators”**  
A. L. Fitzpatrick, J. Kaplan, D. Li and J. Wang.  
arXiv:1612.06385 [hep-th]  
DOI:10.1007/JHEP07(2017)092  
JHEP **1707**, 092 (2017)
42. **“On the Late-Time Behavior of Virasoro Blocks and a Classification of Semiclassical Saddles”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1609.07153 [hep-th]  
DOI:10.1007/JHEP04(2017)072  
JHEP **1704**, 072 (2017)
41. **“Degenerate Operators and the  $1/c$  Expansion: Lorentzian Resummations, High Order Computations, and Super-Virasoro Blocks”**  
H. Chen, A. L. Fitzpatrick, J. Kaplan, D. Li and J. Wang.  
arXiv:1606.02659 [hep-th]  
DOI:10.1007/JHEP03(2017)167  
JHEP **1703**, 167 (2017)
40. **“On information loss in AdS<sub>3</sub>/CFT<sub>2</sub>”**  
A. L. Fitzpatrick, J. Kaplan, D. Li and J. Wang.  
arXiv:1603.08925 [hep-th]  
DOI:10.1007/JHEP05(2016)109  
JHEP **1605**, 109 (2016)
39. **“A Quantum Correction To Chaos”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1601.06164 [hep-th]  
DOI:10.1007/JHEP05(2016)070  
JHEP **1605**, 070 (2016)
38. **“Conformal Blocks Beyond the Semi-Classical Limit”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1512.03052 [hep-th]  
DOI:10.1007/JHEP05(2016)075  
JHEP **1605**, 075 (2016)

37. **“Hawking from Catalan”**  
A. L. Fitzpatrick, J. Kaplan, M. T. Walters and J. Wang.  
arXiv:1510.00014 [hep-th]  
DOI:10.1007/JHEP05(2016)069  
JHEP **1605**, 069 (2016)
36. **“Eikonalization of Conformal Blocks”**  
A. L. Fitzpatrick, J. Kaplan, M. T. Walters and J. Wang.  
arXiv:1504.01737 [hep-th]  
DOI:10.1007/JHEP09(2015)019  
JHEP **1509**, 019 (2015)
35. **“Virasoro Conformal Blocks and Thermality from Classical Background Fields”**  
A. L. Fitzpatrick, J. Kaplan and M. T. Walters.  
arXiv:1501.05315 [hep-th]  
10.1007/JHEP11(2015)200  
JHEP **1511**, 200 (2015)
34. **“Enhanced Pairing of Quantum Critical Metals Near  $d=3+1$ ”**  
A. L. Fitzpatrick, S. Kachru, J. Kaplan, S. Raghu, G. Torroba and H. Wang.  
arXiv:1410.6814 [cond-mat.str-el]  
10.1103/PhysRevB.92.045118  
Phys. Rev. B **92**, no. 4, 045118 (2015)
33. **“An Effective Theory for Holographic RG Flows”**  
J. Kaplan and J. Wang.  
arXiv:1406.4152 [hep-th]  
10.1007/JHEP02(2015)056  
JHEP **1502**, 056 (2015)
32. **“Universality of Long-Distance AdS Physics from the CFT Bootstrap”**  
A. L. Fitzpatrick, J. Kaplan and M. T. Walters.  
JHEP 1408 (2014) 145, arXiv:1403.6829 [hep-th]
31. **“Covariant Approaches to Superconformal Blocks”**  
A. L. Fitzpatrick, J. Kaplan, Z. U. Khandker, D. Li, D. Poland and D. Simmons-Duffin.  
JHEP 1408 (2014) 129, arXiv:1402.1167 [hep-th]
30. **“Non-Fermi liquid behavior of large  $N_B$  quantum critical metals”**  
A. L. Fitzpatrick, S. Kachru, J. Kaplan and S. Raghu.  
arXiv:1312.3321 [cond-mat.str-el]  
10.1103/PhysRevB.89.165114  
Phys. Rev. B **89**, 165114 (2014)
29. **“Non-Fermi liquid fixed point in a Wilsonian theory of quantum critical metals”**  
A. L. Fitzpatrick, S. Kachru, J. Kaplan and S. Raghu.  
arXiv:1307.0004 [cond-mat.str-el]  
10.1103/PhysRevB.88.125116  
Phys. Rev. B **88**, 125116 (2013)
28. **“Conformal Blocks in the Large  $D$  Limit”**  
A. L. Fitzpatrick, J. Kaplan and D. Poland.  
arXiv:1305.0004 [hep-th]  
10.1007/JHEP08(2013)107  
JHEP **1308**, 107 (2013)

27. **“Decoupling of High Dimension Operators from the Low Energy Sector in Holographic Models”**  
A. L. Fitzpatrick, J. Kaplan, E. Katz and L. Randall.  
arXiv:1304.3458 [hep-th]
26. **“The Analytic Bootstrap and AdS Superhorizon Locality”**  
A. L. Fitzpatrick, J. Kaplan, D. Poland and D. Simmons-Duffin.  
arXiv:1212.3616 [hep-th]  
10.1007/JHEP12(2013)004  
JHEP **1312**, 004 (2013)
25. **“AdS Field Theory from Conformal Field Theory”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1208.0337 [hep-th]  
10.1007/JHEP02(2013)054  
JHEP **1302**, 054 (2013)
24. **“A New Theory of Anyons”**  
A. L. Fitzpatrick, S. Kachru, J. Kaplan, E. Katz and J. G. Wacker.  
arXiv:1205.6816 [hep-th]
23. **“Unitarity and the Holographic S-Matrix”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1112.4845 [hep-th]  
10.1007/JHEP10(2012)032  
JHEP **1210**, 032 (2012)
22. **“Analyticity and the Holographic S-Matrix”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1111.6972 [hep-th]  
10.1007/JHEP10(2012)127  
JHEP **1210**, 127 (2012)
21. **“Heavy Flavor Simplified Models at the LHC”**  
R. Essig, E. Izaguirre, J. Kaplan and J. G. Wacker.  
arXiv:1110.6443 [hep-ph]  
10.1007/JHEP01(2012)074  
JHEP **1201**, 074 (2012)
20. **“A Natural Language for AdS/CFT Correlators”**  
A. L. Fitzpatrick, J. Kaplan, J. Penedones, S. Raju and B. C. van Rees.  
arXiv:1107.1499 [hep-th]  
10.1007/JHEP11(2011)095  
JHEP **1111**, 095 (2011)
19. **“Simplified Models for LHC New Physics Searches”**  
D. Alves *et al.* [LHC New Physics Working Group Collaboration].  
arXiv:1105.2838 [hep-ph]  
10.1088/0954-3899/39/10/105005  
J. Phys. G **39**, 105005 (2012)
18. **“Scattering States in AdS/CFT”**  
A. L. Fitzpatrick and J. Kaplan.  
arXiv:1104.2597 [hep-th]
17. **“LHC Predictions from a Tevatron Anomaly in the Top Quark Forward-Backward Asymmetry”**  
Y. Bai, J. L. Hewett, J. Kaplan and T. G. Rizzo.

- arXiv:1101.5203 [hep-ph]  
10.1007/JHEP03(2011)003  
JHEP **1103**, 003 (2011)
16. **“Discovering New Light States at Neutrino Experiments”**  
R. Essig, R. Harnik, J. Kaplan and N. Toro.  
arXiv:1008.0636 [hep-ph]  
10.1103/PhysRevD.82.113008  
Phys. Rev. D **82**, 113008 (2010)
  15. **“On the Origin of Light Dark Matter Species”**  
R. Essig, J. Kaplan, P. Schuster and N. Toro.  
arXiv:1004.0691 [hep-ph]
  14. **“Unraveling  $L(n,k)$ : Grassmannian Kinematics”**  
J. Kaplan.  
arXiv:0912.0957 [hep-th]  
10.1007/JHEP03(2010)025  
JHEP **1003**, 025 (2010)
  13. **“A Duality For The S Matrix”**  
N. Arkani-Hamed, F. Cachazo, C. Cheung and J. Kaplan.  
arXiv:0907.5418 [hep-th]  
10.1007/JHEP03(2010)020  
JHEP **1003**, 020 (2010)
  12. **“The S-Matrix in Twistor Space”**  
N. Arkani-Hamed, F. Cachazo, C. Cheung and J. Kaplan.  
arXiv:0903.2110 [hep-th]  
10.1007/JHEP03(2010)110  
JHEP **1003**, 110 (2010)
  11. **“What is the Simplest Quantum Field Theory?”**  
N. Arkani-Hamed, F. Cachazo and J. Kaplan.  
arXiv:0808.1446 [hep-th]  
10.1007/JHEP09(2010)016  
JHEP **1009**, 016 (2010)
  10. **“On Tree Amplitudes in Gauge Theory and Gravity”**  
N. Arkani-Hamed and J. Kaplan.  
arXiv:0801.2385 [hep-th]  
10.1088/1126-6708/2008/04/076  
JHEP **0804**, 076 (2008)
  9. **“On the consistency relation of the 3-point function in single field inflation”**  
C. Cheung, A. L. Fitzpatrick, J. Kaplan and L. Senatore.  
arXiv:0709.0295 [hep-th]  
10.1088/1475-7516/2008/02/021  
JCAP **0802**, 021 (2008)
  8. **“The Effective Field Theory of Inflation”**  
C. Cheung, P. Creminelli, A. L. Fitzpatrick, J. Kaplan and L. Senatore.  
arXiv:0709.0293 [hep-th]  
10.1088/1126-6708/2008/03/014  
JHEP **0803**, 014 (2008)

7. **“The Sloan Digital Sky Survey-II Supernova Survey: Technical Summary”**  
J. A. Frieman, B. Bassett, A. Becker, C. Choi, D. Cinabro, D. F. DeJongh, D. L. Depoy and M. Doi *et al.*  
arXiv:0708.2749 [astro-ph]  
10.1088/0004-6256/135/1/338  
Astron. J. **135**, 338 (2008)
6. **“The Plasma puddle as a perturbative black hole”**  
C. Cheung and J. Kaplan.  
arXiv:0704.1146 [hep-th]  
10.1088/1126-6708/2007/06/024  
JHEP **0706**, 024 (2007)
5. **“Searching for the Kaluza-Klein Graviton in Bulk RS Models”**  
A. L. Fitzpatrick, J. Kaplan, L. Randall and L. -T. Wang.  
hep-ph/0701150  
10.1088/1126-6708/2007/09/013  
JHEP **0709**, 013 (2007)
4. **“Avoiding an Empty Universe in RS I Models and Large-N Gauge Theories”**  
J. Kaplan, P. C. Schuster and N. Toro.  
hep-ph/0609012
3. **“Dark matter generation and split supersymmetry”**  
J. Kaplan.  
hep-ph/0601262  
10.1088/1126-6708/2006/10/065  
JHEP **0610**, 065 (2006)
2. **“The Fall 2004 SDSS Supernova Survey”**  
M. Sako *et al.* [SDSS Collaboration].  
astro-ph/0504455  
eConf C **041213**, 1424 (2004)
1. **“Extracting data from behind horizons with the AdS / CFT correspondence”**  
J. Kaplan.  
hep-th/0402066