Adam Ball
aball1@pitp.ca

Perimeter Institute
31 Caroline Street
Waterloo, ON

Education

2016-2022	Harvard University	Ph.D. in theoretical physics advisor: Andrew Strominger
2012-2016	California Institute of Technology	B.S. in physics

Research Interests

My interests largely revolve around flat space quantum gravity, often through the lens of celestial holography and infrared effects near the boundary of spacetime.

Positions Held

2023-2025	Perimeter Institute	Postdoctoral Researcher
2022-2023	Brown Physics	Postdoctoral Research Associate

Publications

[1] A. Ball, A. Law and G. Wong, "Dynamical Edge Modes and Entanglement in Maxwell Theory," [arXiv:2403.14542 [hep-th]].

[2] A. Ball, M. Spradlin, A. Yelleshpur Srikant and A. Volovich, "Supersymmetry and the Celestial Jacobi Identity," arXiv:2311.01364.

[3] A. Ball, S. De, A. Yelleshpur Srikant and A. Volovich, "Scalar-graviton amplitudes and celestial holography," JHEP **02**, 097 (2024) doi:10.1007/JHEP02(2024)097 [arXiv:2310.00520 [hep-th]].

[4] A. Ball, Y. Hu and S. Pasterski, "Multicollinear singularities in celestial CFT," JHEP **02**, 219 (2024) doi:10.1007/JHEP02(2024)219 [arXiv:2309.16602 [hep-th]].

[5] A. Ball, A. Bencke, Y. Chen and A. Volovich, "Hidden Symmetry in the Double Copy," JHEP **10**, 085 (2023) doi:10.1007/JHEP10(2023)085 arXiv:2307.01338.

[6] A. Ball, "Celestial Locality and the Jacobi Identity," JHEP **01**, 146 (2023) doi:10.1007/JHEP01(2023)146 arXiv:2211.09151.

[7] A. Ball, S. A. Narayanan, J. Salzer and A. Strominger, "Perturbatively Exact $w_{1+\infty}$ Asymptotic Symmetry of Quantum Self-Dual Gravity," JHEP **01**, 114 (2022) doi:10.1007/JHEP01(2022)114 arXiv:2111.10392.

[8] A. Ball, "Global First Laws of Accelerating Black Holes," Class. and Quant. Grav. **38**, no.19, 195024 (2021) doi:10.1088/1361-6382/ac2139 arXiv:2103.07521.

[9] A. Atanasov, A. Ball, W. Melton, A. M. Raclariu and A. Strominger, "(2, 2) Scattering and the Celestial Torus," JHEP **07**, 083 (2021) doi:10.1007/JHEP07(2021)083 arXiv:2101.09591.

[10] A. Ball and N. Miller, "Accelerating Black Hole Thermodynamics with Boost Time," Class. Quant. Grav. **38**, no.14, 145031 (2021) doi:10.1088/1361-6382/ac0766 arXiv:2008.03682.

[11] A. Ball, E. Himwich, S. A. Narayanan, S. Pasterski and A. Strominger, "Uplifting AdS_3/CFT_2 to Flat Space Holography," JHEP **08**, 168 (2019) doi:10.1007/JHEP08(2019)168 arXiv:1905.09809.

[12] A. Ball, M. Pate, A. M. Raclariu, A. Strominger and R. Venugopalan, "Measuring Color Memory in a Color Glass Condensate at Electron–Ion Colliders," Annals Phys. **407**, 15-28 (2019) doi:10.1016/j.aop.2019.04.010 arXiv:1805.12224.

[13] A. Ball and M. Marcolli, "Spectral Action Models of Gravity on Packed Swiss Cheese Cosmology," Class. Quant. Grav. **33**, no.11, 115018 (2016) doi:10.1088/0264-9381/33/11/115018 arXiv:1506.01401.

Invited Talks

Workshop on Celestial Holography	Simons Satellite Meeting, NYC	April 2024
Strominger group meeting	Harvard University	February 2024
Simons Celestial Holography Seminar	Zoom	November 2023
Weekly seminar	SISSA (Trieste)	July 2023
Strominger group meeting	Harvard University	June 2023
Weekly seminar	Perimeter Institute	March 2023
Strominger group meeting	Harvard University	December 2022
Workshop on Celestial Holography	Corfu Summer Institute	September 2022
Conference on Flat Holography (gong show)	Harvard BHI/CMSA	June 2022
Weekly seminar	Durham University	March 2022
Weekly seminar	Institute for Advanced Study	November 2021
Celestial Holography 2021 (gong show)	Princeton (PCTS)	February 2021

Teaching Fellowships

Harvard:

2022 Spring	Ph 12A: *Mechanics and Statistical Physics from an Analytical, Numerical and Experimental Perspective*
2020 Fall	Ph 253C: *Topics in Quantum Field Theory*
2019 Fall	Ph 251A: *Advanced Quantum Mechanics I*
2018 Fall	Ph 251A: *Advanced Quantum Mechanics I*
2018 Summer	Ph S-1B: *Electromagnetism, Circuits, Waves, Optics, and Imaging*
2018 Spring	Ph 12A: *Mechanics and Statistical Physics from an Analytical, Numerical and Experimental Perspective*
2017 Fall	Ph 15A: *Introductory Mechanics and Relativity*
2017 Summer	Ph S-1A: *Mechanics*

Mentorship

2023-2024	Oversaw senior theses of two Brown undergraduates
2023 Fall	Adopt-a-Physicist
2022-2023	Oversaw research with two Brown undergraduates (see arxiv:2307.01338)
2022 Fall	Adopt-a-Physicist
2021 Fall	Adopt-a-Physicist
2020-2021	Harvard Physics Polaris Mentoring Program
2019-2020	Harvard Physics Graduate Buddy Program
2018 Fall	Adopt-a-Physicist
2015-2016	Tutored at underserved elementary schools in Pasadena through Caltech Y

Awards and Honors

2020	Harvard Certificate of Distinction in Teaching
2019	Harvard Certificate of Distinction in Teaching
2016-2017	Harvard Purcell Fellowship
2016	NSF GRFP Honorable Mention
2015-2016	Caltech Male Scholar-Athlete of the Year

Referee for Journals

JHEP, Scientific Reports

Organization

Co-organizer, New England Strings 2023