

ADITYA DHUMUNTARAO

EDUCATION	University of Minnesota , School of Physics and Astronomy PH.D., PHYSICS, Dissertation Title: <i>Holography and the Semiclassical Gravitational Path Integral</i> Internal Advisors: Drs. Joseph Kapusta & Aleksey Cherman External Mentors: Drs. Robert Mann, Niayesh Afshordi, & Matthew Headrick	May 2022
	University of Cambridge , Churchill College (HONORS) MASTERS IN ADVANCED STUDY, PART III OF THE MATHEMATICAL TRIPOS, Dissertation Title: <i>Superrotation Charge and Supertranslation Hair on Black Holes</i> Advisor: Dr. Malcolm Perry	May 2017
	Arizona State University , Barrett the Honors College (HONORS) B.S. IN MATHEMATICS & B.S. IN PHYSICS Senior Thesis: <i>Quantum Matter Coupled to Classical Gravity</i> Advisors: Drs. Paul Davies & Maulik Parikh	June 2016
EXPERIENCES	Perimeter Institute for Theoretical Physics , Afshordi Group GRADUATE VISITOR: <i>Conducted research in quantum field theory on curved spacetimes</i> Institute for Advanced Study , Prospects in Theoretical Physics SELECTED PARTICIPANT: <i>Attended the PITP 2018 “From Qubits to Spacetime” Summer Program</i>	Aug. 2017–Aug. 2018 Summer 2018
RESEARCH INTERESTS	Broad Topics: Classical, Semiclassical, & Quantum Gravity. Holography. (Extending) General Relativity. Black Holes. Strongly Coupled Gauge Theories and Conformal Field Theories. Currently Exploring: Graded Entanglement Entropy and Gravitational Saddle Points for $\mathcal{N} = 4$ SYM. Gravitational Instabilities of AdS Black Objects. Geometric Flows in Semiclassical Gravity. Prior Interests: Modeling QCD Phase Diagram with AdS/CFT. Turbulent Fluid Flows. Computational Modeling of Chaotic Phenomena in Chemical Mixing.	
SUBMITTED PUBLICATIONS	6. Dhumuntarao, A. , Mahbub, R., (2021) <i>Gravitational Instabilities of Uniform Black Strings in AdS</i> , [arXiv:2110.08334]. <u>SUBMITTED TO PRL.</u>	
REFEREED PUBLICATIONS	5. Dhumuntarao, A. , Mann, R., (2021) <i>Criticality of lower dimensional AdS_d black holes</i> , <i>Phys. Rev. D</i> 104 , 064006 [arXiv:2106.04087]. 4. Cherman, A., Dhumuntarao, A. , (2021) <i>Confinement and graded partition functions for $\mathcal{N} = 4$ SYM</i> , <i>Phys. Rev. D</i> 103 , 066013 [arXiv:2012.12341]. 3. Dhumuntarao, A. , Kapusta, J., Plumberg, C., (2020) <i>Randall-Sundrum Model with a Dilaton Field at Finite Temperature</i> , <i>Phys. Rev. D</i> 101 , 066023 [arXiv:2001.00038]. 2. Bartz, S. P., Dhumuntarao, A. , Kapusta, J., (2018) <i>Dynamical AdS/Yang-Mills model</i> , <i>Phys. Rev. D</i> 98 , 026019 [arXiv:1801.06118]. 1. Tang, W., Dhumuntarao, A. , (2015) <i>Bistability in Inhomogeneity—Effects of Flow Coherent Structures on the Fate of a Bistable Reaction</i> , <i>AIP. Physics of Fluids</i> 27 , 076601 [arXiv:1801.06118].	
HONORS AND AWARDS	Doctoral Dissertation Fellow , University of Minnesota	2021–2022
	Graduate Research Fellowship Award , NSF	2016–2021
	Charles Wexler Mathematics Prize , Arizona State University	2016
	Outstanding Undergraduate Award , Arizona State University	2016

Origins Project Award , Arizona State University	2015-2016
National Summer Research Grant [1460141] , NSF	2015
National Leadership Award , Society of Physics Students	2015
Arek Dieterle Memorial Award , Arizona State University	2015
Jack H. Hawes Mathematics Scholar , Arizona State University	2015
Motil Travel Award , Arizona State University	2015
National Summer Research Grant [1148771] , NSF	2014
New American Merit Scholar , NSF	2011–2015

INVITED TALKS

6. Perimeter Institute for Theoretical Physics, Strong Gravity Group, <i>Gravitational Instabilities of Uniform Black Strings in AdS</i>	October 2021
5. University of Waterloo, Mann Group, <i>Gravitational Instabilities of Uniform Black Strings in AdS</i>	October 2021
4. Brandies University, Headrick Group, <i>Gravitational Instabilities of Uniform Black Strings in AdS</i>	September 2021
3. Brandies University, Headrick Group, <i>Graded Geometric Entropy and Gravitational Saddle Points for $\mathcal{N} = 4$ SYM</i>	August 2021
2. Brandies University, Headrick Group, <i>Confinement and Graded Partition Functions for $\mathcal{N} = 4$ SYM</i>	August 2021
1. University of Waterloo, Mann Group <i>Lower Dimensional Black Hole Chemistry</i>	March 2021

CONTRIBUTED TALKS

13. American Physical Society Meeting <i>Confinement and Graded Partition Functions for $\mathcal{N} = 4$ SYM</i>	April 2021
12. University of Cambridge: Part III Seminar <i>AdS/CFT Correspondence on a Pure $SU(3)$ Gauge Theory</i>	November 2016
11. Joint Mathematics Meeting, <i>Bistability in Inhomogeneity – Effects of Flow Coherent Structures on the Fate of a Bistable Reaction.</i>	January 2015
10. Society of Physics Students: Regional Body Meeting, <i>Bistability in Inhomogeneity – Effects of Flow Coherent Structures on the Fate of a Bistable Reaction.</i>	February 2015
9. APS 2015 March Meeting, <i>Bistability in Inhomogeneity – Effects of Flow Coherent Structures on the Fate of a Bistable Reaction.</i>	March 2015
8. Summer Undergraduate Research Expo, <i>AdS/CFT on a Pure $SU(3)$ Gauge Theory</i>	August 2015
7. Society of Physics Students: Regional Body Meeting, <i>AdS/CFT on a Pure $SU(3)$ Gauge Theory</i>	October 2015
6. APS Division of Nuclear Physics, <i>AdS/CFT on a Pure $SU(3)$ Gauge Theory</i>	October 2015

5. APS Four Corners Conference, October 2015
AdS/CFT on a Pure SU(3) Gauge Theory
4. Mentoring through Critical Transition Points Colloquium, June 2014
Bistability in Inhomogeneity – Effects of Flow Coherent Structures on the Fate of a Bistable Reaction.
3. Mentoring through Critical Transition Points Colloquium, June 2014
Self Interacting Dark Matter Models of Satellite Galaxies.
2. ASU Applied Mathematics Seminar, October 2014
Bistability in Inhomogeneity – Effects of Flow Coherent Structures on the Fate of a Bistable Reaction.
1. APS New England Section Regional Meeting, November 2014
Bistability in Inhomogeneity – Effects of Flow Coherent Structures on the Fate of a Bistable Reaction.

EMPLOYMENT	Research Assistant , University of Minnesota, Minneapolis, MN, USA Fall 2018–Fall 2022
	Teaching Assistant , University of Minnesota, Minneapolis, MN, USA Fall 2018
	Graduate Visitor , Perimeter Institute, Waterloo, Ontario, CA Aug. 2017–Aug. 2018
	Origins Project Fellow , Arizona State University, Tempe, AZ, USA Spring 2016
	Summer Research Fellow , University of Minnesota, Minneapolis, MN, USA Summer 2015
	Summer Research Fellow , Arizona State University, Tempe, AZ, USA Summer 2014
TEACHING EXPERIENCE	Graduate Teaching Assistant , University of Minnesota Phys. 1301, General Physics I Spring 2018
	Undergraduate Teaching Assistant , Arizona State University General Physics: Electricity and Magnetism Fall 2016 Mathematical Methods in Physics II Spring 2015 Mathematical Methods in Physics II Fall 2016 Quantum Mechanics II Spring 2016 Statistical and Thermal Physics Fall 2015
PROFESSIONAL ACTIVITIES, OUTREACH, AND SERVICE	American Physical Society, member 2019–Present Division of Gravitational Physics
	Outreach Volunteer at <i>Open Arms</i> , 2019 – 2020 Prepared meals for persons with life threatening illnesses in Minneapolis, Minnesota Volunteer at <i>Our Hearts Your Soles</i> , November 2019 Provided examinations and free shoes to homeless persons in Minneapolis, Minnesota UNIVERSITY OF CAMBRIDGE, CHUTALK <i>Black Holes and the Information Paradox.</i> March 2017
	OPERATIONS DIRECTOR AND FOUNDING MEMBER OF TEDxASU Estab. 2016

UNREFEREED
PUBLICATIONS

2. **Dhumuntarao, A.** (2018) *Lorentzian Einstein-Ricci Flows*, [[arXiv:1807.02731](https://arxiv.org/abs/1807.02731)].
1. **Dhumuntarao, A.**, Gálvez Gherzi, J. T., Afshordi, N., (2018), *Instantaneous Temperatures á la Hadamard: Towards a generalized Stefan-Boltzmann law for curved spacetime*, [[arXiv:1804.05382](https://arxiv.org/abs/1804.05382)].

COMPUTER SKILLS

Expert in MATHEMATICA.
Proficient in MATLAB, BASH, EMACS.
Experience in FORTRAN, JAVA.
Markup languages: L^AT_EX, HTML, CSS, MARKDOWN.

Software—Author of NotesTeX L^AT_EX package (<https://github.com/Adhumunt/NotesTeX>).

CONTACT
INFORMATION

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REFERENCES

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