

Alejandra Castro

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Professional Experience

Associate Professor, Institute of Physics, University of Amsterdam, January 2017–onwards.

Assistant Professor, Institute of Physics, University of Amsterdam, September 2013–December 2016.

Postdoctoral Research Scholar, Center for the Fundamental Laws of Nature, Harvard University, September 2012–August 2013.

Postdoctoral Research Fellow, Physics Department, McGill University, July 2009–August 2012.

Education

Ph.D. in Physics, University of Michigan (UM), 2009.

Dissertation: String Theory Effects on Black Hole Physics.

Advisor: Prof. Finn Larsen.

Licenciatura en Astronomía, *Maximum Distinction*, Pontificia Universidad Católica de Chile (PUC), 2004.

Advisor: Prof. Máximo Bañados.

Honours & Fellowships

Emmy Noether Fellow, Perimeter Institute, 2015.

Rackham Pre-doctoral Fellowship, School of Graduate Studies, UM, 2008–2009.

Rackham International Student Fellowship, School of Graduate Studies, UM, 2006.

Honors Scholarship for Highest Rank in Class, Physics Department, PUC, 2003.

European Southern Observatories Scholarship for Undergraduate Studies in Astronomy, ESO, 2001–2004.

Awards

Award for Best Contributed Talk, Centro Stefano Franscini Monte Verita, Ascona, Switzerland, July 2010.

First-Year Graduate Student Instructor Award, Physics Department, UM, May 2005.

Invited Talks at International Conferences

Focus session, Physics@FOM, Veldhoven, January 2016.

Strings Conference 2015, ICTS-TIFR, Bangalore, India, July 2015.

EuroStrings 2015, DAMTP, Cambridge, UK, March 2015.

Holographic Methods and Applications, ESF network HoloGrav, Iceland, August 2014.

Quantum fields beyond perturbation the theory, KITP, UC Santa Barbara, USA, January 2014.

20th International Conference on General Relativity and 10th Amaldi Conference on Gravitational Waves, Warsaw, Poland, July 2013.

Conference The Holographic Way, Nordita, Stockholm, October 2012.

Strings Conference 2012, Ludwig-Maximilians-Universitat Munchen, Germany, July 2012.

Black Holes and Information Conference, KITP, UC Santa Barbara, USA May 2012.

Strings, M-Theory and Quantum Gravity, Centro Stefano Franscini Monte Verita, Switzerland, July 2010.

Great Lakes Strings Conference at University of Wisconsin, Madison, April 2008.

Colloquiums & Symposiums

Higgs Centre for Theoretical Physics, University of Edinburgh, January 2017.

Initiative for the Theoretical Sciences, CUNY, New York, April 2016.

Yau Mathematical Sciences Center and Math Department, Tsinghua University, Beijing, March 2016.

Department of Theoretical Physics, University of Geneva, February 2016.

National Seminar Theoretical High Energy Physics, Amsterdam, November 2015.

Physics Department, McGill University, January 2015

DAMTP, Cambridge University, February 2014

Lectures series

Lectures on “Higher spin gravity,” 56th Cracow School of Theoretical Physics, Poland, May 2016.

Lectures on “Black hole physics,” Dutch Research School of Theoretical Physics, Dalfsen, January 2016.

Lectures on “AdS/CFT,” Fudan University, Shanghai, December 2015.

Lectures on “A survey on 3D gravity,” Niels Bohr Institute, Copenhagen, October 2015.

Lectures on “Higher spin gravity,” Cargese Summer Institute, Corsica, June 2014.

Lectures on “Black hole thermodynamics,” Institute of Theoretical Physics, KU Leuven, Belgium, June 2014.

Lectures on “Higher spin gravity,” Instituto Galego de Fisica de Altas Enerxias, Santiago de Compostela, Spain, April 2014.

Lectures on “Black holes and non-perturbative effects in higher spin theories,” 5th Taiwan School on Strings and Fields, National Central University, Taiwan, December 2012

Research Publications

1. A. Castro, E. Llabres and F. Rejon-Barrera, “Geodesic Diagrams, Gravitational Interactions & OPE Structures,” arXiv:1702.06128 [hep-th].
2. T. Andrade, A. Castro and D. Cohen-Maldonado, “The Spectrum of Static Subtracted Geometries,” arXiv:1611.09330 [hep-th].
3. A. Belin, A. Castro, J. Gomes and C. A. Keller, “Siegel Modular Forms and Black Hole Entropy,” arXiv:1611.04588 [hep-th].
4. A. Castro, “Lectures on Higher Spin Black Holes in AdS₃ Gravity,” Acta Physica Polonica B **47** 12, 2016 doi:10.5506/aphyspolb.47.2479.
5. A. Castro, N. Iqbal and E. Llabres, “Eternal Higher Spin Black Holes: a Thermofield Interpretation,” JHEP **1608** (2016) 022 doi:10.1007/JHEP08(2016)022 arXiv:1602.09057 [hep-th].
6. M. Banados, A. Castro, A. Faraggi and J. I. Jottar, “Extremal Higher Spin Black Holes,” JHEP **1604**, 077 (2016) arXiv:1512.00073 [hep-th].
7. A. Castro, D. M. Hofman and N. Iqbal, “Entanglement Entropy in Warped Conformal Field Theories,” JHEP **1602**, 033 (2016) arXiv:1511.00707 [hep-th].
8. A. Castro, D. M. Hofman and G. Sarosi, “Warped Weyl fermion partition functions,” JHEP **1511**, 129 (2015) arXiv:1508.06302 [hep-th].
9. A. Belin, A. Castro and L. Y. Hung, “Fake gaps in AdS₃/CFT₂,” JHEP **1511**, 145 (2015) arXiv:1508.01201 [hep-th].
10. J. de Boer, A. Castro, E. Hijano, J. I. Jottar and P. Kraus, “Higher Spin Entanglement and W_N Conformal Blocks,” JHEP **1507**, 168 (2015) arXiv:1412.7520 [hep-th].
11. A. Castro and W. Song, “Comments on AdS₂ Gravity,” arXiv:1411.1948 [hep-th].
12. A. Castro and E. Llabrés, “Unravelling Holographic Entanglement Entropy in Higher Spin Theories,” JHEP **1503**, 124 (2015) arXiv:1410.2870 [hep-th].
13. A. Castro, S. Detournay, N. Iqbal and E. Perlmutter, “Holographic entanglement entropy and gravitational anomalies,” JHEP **1407**, 114 (2014) arXiv:1405.2792 [hep-th].
14. M. Ammon, A. Castro and N. Iqbal, “Wilson Lines and Entanglement Entropy in Higher Spin Gravity,” JHEP **1310**, 110 (2013) arXiv:1306.4338 [hep-th].
15. A. Castro, N. Dehmami, G. Giribet, and D. Kastor, “On the Universality of Inner Black Hole Mechanics and Higher Curvature Gravity,” JHEP **2013** (2013) 164 arXiv:1304.1696 [hep-th].
16. A. Castro, J. M. Lapan, A. Maloney, and M. J. Rodriguez, “Black Hole Scattering from Monodromy,” Class. Quant. Grav. **30**, 165005 (2013) arXiv:1304.3781 [hep-th].
17. A. Castro, J. M. Lapan, A. Maloney, and M. J. Rodriguez, “Black Hole Monodromy and Conformal Field Theory,” Phys. Rev. D **88**, 044003 (2013) arXiv:1303.0759 [hep-th].
18. S. Banerjee, A. Castro, S. Hellerman, E. Hijano, A. Lepage-Jutier, A. Maloney and S. Shenker, “Smoothed Transitions in Higher Spin AdS Gravity,” Class. Quant. Grav. **30**, 104001 (2013) arXiv:1209.5396 [hep-th].
19. A. Castro and A. Maloney, “The Wave Function of Quantum de Sitter,” JHEP **1211** (2012) 096 arXiv:1209.5757 [hep-th].
20. A. Castro and M. J. Rodriguez, “Universal properties and the first law of black hole inner mechanics,” Phys. Rev. D **86**, 024008 (2012) arXiv:1204.1284 [hep-th].
21. A. Castro, E. Hijano and A. Lepage-Jutier, “Unitarity Bounds in AdS₃ Higher Spin Gravity,” JHEP **1206**, 001 (2012) arXiv:1202.4467 [hep-th].

22. A. Castro, R. Gopakumar, M. Gutperle, J. Raeymaekers “Conical Defects in Higher Spin Theories,” JHEP **1202**, 096 (2012) arXiv:1111.3381[hep-th].
23. A. Castro, M. Gaberdiel, T. Hartman, A. Maloney, R. Volpato, “The Gravity Dual of the Ising Model,” Phys. Rev. D **85**, 024032 (2012) arXiv:1111.1987 [hep-th].
24. A. Castro, E. Hijano, A. Lepage-Jutier, A. Maloney, “Black Holes and Singularity Resolution in Higher Spin Gravity,” JHEP **1201**, 031 (2012) arXiv:1110.4117 [hep-th].
25. A. Castro, T. Hartman, A. Maloney, “The Gravitational Exclusion Principle and Null States in Anti-de Sitter Space,” Class. Quant. Grav. **28** (2011) 195012. arXiv:1107.5098 [hep-th].
26. A. Castro, N. Lashkari, A. Maloney, “Quantum Topologically Massive Gravity in de Sitter Space,” JHEP **1108** (2011) 040. arXiv:1105.4733 [hep-th].
27. A. Castro, N. Lashkari, A. Maloney, “A de Sitter Farey Tail,” Phys. Rev. **D83** 124027 (2011) . arXiv:1103.4620 [hep-th].
28. A. Castro, A. Lepage-Jutier and A. Maloney, “Higher Spin Theories in AdS₃ and a Gravitational Exclusion Principle,” JHEP **1101**, 142 (2011) arXiv:1012.0598 [hep-th].
29. A. Castro, A. Maloney and A. Strominger, “Hidden Conformal Symmetry of the Kerr Black Hole,” Phys. Rev. D **82**, 024008 (2010) arXiv:1004.0996 [hep-th].
30. A. Castro, C. Keeler and F. Larsen, “Three Dimensional Origin of AdS₂ Quantum Gravity,” JHEP **1007**, 033 (2010) arXiv:1004.0554 [hep-th].
31. A. Castro and F. Larsen, “Near Extremal Kerr Entropy from AdS₂ Quantum Gravity,” JHEP **0912**, 037 (2009) arXiv:0908.1121 [hep-th].
32. A. Castro and J. Simon, “Deconstructing the D0-D6 system,” JHEP **0905**, 078 (2009) arXiv:0903.5523 [hep-th].
33. A. Castro, D. Grumiller, F. Larsen and R. McNees, “Holographic Description of AdS₂ Black Holes,” JHEP **0811**, 052 (2008) arXiv:0809.4264 [hep-th].
34. A. Castro and S. Murthy, “Corrections to the statistical entropy of five dimensional black holes,” JHEP **0906**, 024 (2009) arXiv:0807.0237 [hep-th].
35. A. Castro, J. L. Davis, P. Kraus and F. Larsen, “String Theory Effects on Five-Dimensional Black Hole Physics,” Int. J. Mod. Phys. A **23**, 613 (2008) arXiv:0801.1863 [hep-th].
36. A. Castro, J. L. Davis, P. Kraus and F. Larsen, “Precision entropy of spinning black holes,” JHEP **0709**, 003 (2007) arXiv:0705.1847 [hep-th].
37. A. Castro, J. L. Davis, P. Kraus and F. Larsen, “5D Black Holes and Strings with Higher Derivatives,” JHEP **0706**, 007 (2007) arXiv:hep-th/0703087.
38. A. Castro, J. L. Davis, P. Kraus and F. Larsen, “5D attractors with higher derivatives,” JHEP **0704**, 091 (2007) arXiv:hep-th/0702072.