

HASSAN ALSHAL, PH.D.

Physics Researcher and Lecturer Faculty at Santa Clara University

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Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053



SCAN ME

Academic Experiences

Lecturer

Department of Physics & Engineering Physics, Santa Clara University

Sep 2021 – Present

Santa Clara, CA, USA

Adjunct Lecturer

Department of Chemistry & Physics, Lincoln University

Jan 2021 – Jul 2021

Oxford, PA, USA

Teaching Assistant

Department of Physics, University of Miami

Sep 2013 – Dec 2020

Miami, FL, USA

Teaching Assistant

Department of Physics, Faculty of Science, Cairo University

Jun 2011 – Oct 2012

Giza, Egypt

Teaching Assistant

Department of Physics, The American University in Cairo

Sep 2010 – May 2011

New Cairo, Egypt

Education

Ph.D., Physics, Dissertation Title:

"Aspects of Massive Dual Gravity"

Supervised by: T. L. Curtright, Department of Physics, University of Miami

Sep 2013 – Aug 2020

Miami, FL, USA

M.Sc., Physics, Thesis Title:

"Green Functions, Sommerfeld Images, and Wormholes"

Supervised by: T. L. Curtright, Department of Physics, University of Miami

Sep 2018 – May 2019

Miami, FL, USA

Masters of Advanced Studies (MASt), Part III of Math. Tripos

Department of Theoretical Physics and Applied Mathematics (DAMTP),
University of Cambridge

Sep 2012 – Jun 2013 (Incomplete)

Cambridge, UK

B.Sc. Physics, with Honour (Ranked 1st)

Department of Physics, Cairo University

Sep 2006 – May 2010

Giza, Egypt

B.Sc. Pharmaceutical Sciences

Faculty of Pharmacy, Ain Shams University

Sep 2001 – Sep 2006

Cairo, Egypt

Awards



Awards for Essays on Gravitation
(Honorable Mention)

Gravity Research Foundation, 2021



Graduate Summer Research
Assistantship Award

Department of Physics,
University of Miami, 2014 – 2020



BP Cambridge Scholarships for Egypt

Cambridge Overseas Trust,
University of Cambridge, 2012



Cairo University Award for Excellence
for year 2009/2010

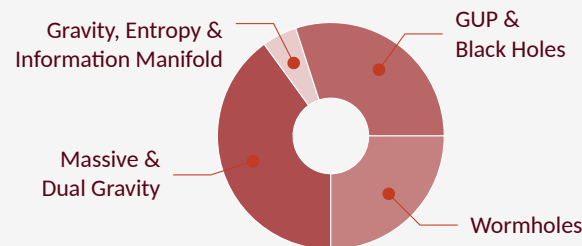
Cairo University, 2010



Schlumberger Awards for Outstanding
Achievements (twice)

Highest GPA in physics classes,
Cairo University, 2008 & 2009

Research Areas



Software Skills



Wolfram Mathematica

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Maple (with GRTensor)

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L^AT_EX (with TeXmaker)

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LINUX (with BASH)

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PYTHON (with SciPy)

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Machine Learning (Scikit)

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Deep Learning (Pytorch)

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MD Simulation (Gromacs)

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Conferences & Seminars


 Undergraduates Seminars of SCU Department of Physics

Title: General Relativity

 Department of Physics, Santa Clara University


 April-June 2024

 Santa Clara, CA, USA


 SCU Department of Physics Seminars

Title: Massive Gravity

 Department of Physics, Santa Clara University

 Jan 2024

 Santa Clara, CA, USA

 Graduate Seminars of Department of Physics

Title: Aspects of S-Duality and Curtright Fields

 Department of Physics, University of Miami

 Jan 2020

 Miami, FL, USA


 Annual Coral Gables Conference

Title: Massive Dual Spin-2 Revisited

 Department of Physics, University of Miami

 Dec 2019

 Fort Lauderdale, FL, USA


 Graduate Seminars of Department of Physics

Title: Green Functions Electrostatics and Wormhole Geometry

 Department of Physics, University of Miami

 Mar 2019

 Miami, FL, USA


 Graduate Seminars of Department of Physics

Title: Generalized Uncertainty Principle and Quantum Gravity

 Department of Physics, University of Miami

 Nov 2018

 Miami, FL, USA


 Graduate Seminars of Department of Physics

Title: Galileons and Black Holes

 Department of Physics, Cairo University

 Aug 2018

 Giza, Egypt

 Graduate Seminars of Department of Physics

Title: Galileons as an Alternative Theory to General Relativity

 Department of Physics, University of Miami

 Apr 2016

 Miami, FL, USA


 Graduate Seminars of MAST & Part III Math. Tripos

Title: Symmetries and Particle Physics

 Dep. of Applied Math. and Theoretical Physics, University of Cambridge

 2012 – 2013

 Cambridge, UK

 Summer School in Cosmology

 The International Center for Theoretical Physics

 Jul 2010


 Trieste, Italy

Nondegree Courses

 Introduction to Machine Learning

 Coursera, authorized by Duke University

 May 2021

 Online

 Intro. to Python Programming

 Udacity

 Sep 2020

 Online

 Summer School in Cosmology

 The Abdus Salam International Center for Theoretical Physics

 July 2010

 Trieste, Italy


Journals Referee


 Adv. High Energy Phys.

 Int. J. Mod. Phys. A.

 Found. Phys.


 Int. J. Geom. Methods Mod. Phys.

 Int. J. Theor. Phys.


 Eur. Phys. J. Plus.

 Mod. Phys. Lett. A.

 Sci. Rep.

 Eur. Phys. J. C

Volunteering


 Moderator of Academic Sessions for Molecular Dynamics Workshop

 The Second Students' Conference Of Pharmaceutical Studies, Ain Shams University

 Sep 2006 – Apr 2007

 Cairo, Egypt

Nonscholar Experiences

 Pharmacy manager and pharmacist by training

 Licensed by Ministry of Health and Pharmacists Syndicate, Egypt

 Sep 2006 – Oct 2012

 Cairo, Egypt

Journal Articles

- Alshal, Hassan, Leyang Ding, Adelina Hernandez, Leo A. Illing, and Ivar Rydstrom (2025). “Linearized stability of Harada thin-shell wormholes”. In: *Gen. Rel. Grav.* 57.1, p. 9. DOI: 10.1007/s10714-024-03344-3. arXiv: 2407.08945 [gr-qc].
- Alshal, Hassan (2023). “Einstein’s equations and the pseudo-entropy of pseudo-Riemannian information manifolds”. In: *Gen. Rel. Grav.* 55.7, p. 86. DOI: 10.1007/s10714-023-03130-7. arXiv: 2301.13017 [gr-qc].
- Curtright, Thomas and Hassan Alshal (Nov. 2022). “Newtonian Gravity on an N-Sphere”. In: *Bulg. J. Phys.* 50.1, pp. 1–12. arXiv: 2211.08236 [physics.class-ph].
- Ali, A. F., E. Moulay, K. Jusufi, and H. Alshal (2022). “Unitary symmetries in wormhole geometry and its thermodynamics”. In: *Eur. Phys. J. C* 82.12, p. 1170. DOI: 10.1140/epjc/s10052-022-11095-1. arXiv: 2302.08307 [hep-th].
- Hemeda, Mohammed, Hassan Alshal, Ahmed Farag Ali, and Elias C. Vagenas (Aug. 2022). “Gravitational Observations and LQGUP”. in: *Nucl. Phys. B* 1000, p. 116456. DOI: 10.1016/j.nuclphysb.2024.116456. arXiv: 2208.04686 [gr-qc].
- Danehkar, Ashkbiz, Hassan Alshal, and Thomas L. Curtright (2021). “Dual Fields of Massive/Massless Gravitons in IR/UV Completions”. In: *Int. J. Mod. Phys. D* 30.14, p. 2142021. DOI: 10.1142/S0218271821420219. arXiv: 2109.05148 [hep-th].
- Van Kortryk, T. S., T. L. Curtright, and H. Alshal (2020). “On Enceladian Fields”. In: *Bulg. J. Phys.* 48.2, pp. 138–145. arXiv: 2012.13959 [physics.pop-ph].
- Vagenas, Elias C., Ahmed Farag Ali, Mohammed Hemeda, and Hassan Alshal (2020). “Massless Charged Particles Tunneling Radiation from a RN-dS Horizon and the Linear and Quadratic GUP”. in: *Ann. Phys.* 432, p. 168574. DOI: 10.1016/j.aop.2021.168574. arXiv: 2008.09853 [hep-th].
- Alshal, Hassan (2019). “Linearized Stability of Bardeen de-Sitter Thin-Shell Wormholes”. In: *EPL* 128. 6, p. 60007. DOI: 10.1209/0295-5075/128/60007. arXiv: 1909.07811 [gr-qc].
- Curtright, Thomas L., David B. Fairlie, and H. Alshal (2019). “A Galileon Primer”. In: arXiv: 1212.6972 [hep-th].
- Alshal, H. and T. L. Curtright (2019). “Massive Dual Gravity in N Spacetime Dimensions”. In: *JHEP* 09, p. 063. DOI: 10.1007/JHEP09(2019)063. arXiv: 1907.11537 [hep-th].
- Curtright, T. L. and H. Alshal (2019). “Massive Dual Spin 2 Revisited”. In: *Nucl. Phys. B* 948, p. 114777. DOI: 10.1016/j.nuclphysb.2019.114777. arXiv: 1907.11532 [hep-th].
- Vagenas, Elias C., Ahmed Farag Ali, and Hassan Alshal (2019). “Massless charged particles, naked singularity, and GUP in Reissner-Nordström-de Sitter-like spacetime”. In: *Phys. Rev. D* 99. 8, p. 084013. DOI: 10.1103/PhysRevD.99.084013. arXiv: 1903.09634 [hep-th].
- Vagenas, Elias C., Ahmed Farag Ali, Mohammed Hemeda, and Hassan Alshal (2019). “Linear and Quadratic GUP, Liouville Theorem, Cosmological Constant, and Brick Wall Entropy”. In: *Eur. Phys. J. C* 79. 5, p. 398. DOI:

10.1140/epjc/s10052-019-6908-z. arXiv: 1903.08494 [hep-th].

- Al-Modlej, Abeer, Salwa Alsaleh, Hassan Alshal, and Ahmed Farag Ali (2019). “Proton Decay and the Quantum Structure of Spacetime”. In: *Can. J. Phys.* 97, pp. 1317–1322. DOI: 10.1139/cjp-2018-0423. arXiv: 1903.02940 [hep-th].
- Vagenas, Elias C., Ahmed Farag Ali, and Hassan Alshal (2019). “GUP and the no-cloning theorem”. In: *Eur. Phys. J. C* 79. 3, p. 276. DOI: 10.1140/epjc/s10052-019-6789-1. arXiv: 1811.06614 [gr-qc].
- Alshal, H., T. Curtright, and S. Subedi (2018). “Image Charges Re-Imagined”. In: *Bulg. J. Phys.* 48.2, pp. 202–224. arXiv: 1808.08300 [physics.class-ph].
- Alshal, Hassan and Thomas Curtright (2018). “Grounded Hyperspheres as Squashed Wormholes”. In: *J. Math. Phys.* 60. 3, p. 032901. DOI: 10.1063/1.5044432. arXiv: 1806.03762 [physics.class-ph].
- Curtright, T., H. Alshal, P. Baral, S. Huang, J. Liu, K. Tamang, X. Zhang, and Y. Zhang (2018). “The Conducting Ring Viewed as a Wormhole”. In: *Eur. J. Phys.* 40. 1, p. 015206. DOI: 10.1088/1361-6404/aae3cd. arXiv: 1805.11147 [physics.class-ph].