HASSAN ALSHAL, PH.D.

Physics Researcher and Adjunct Faculty at Santa Clara University

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SCAN ME

Academic Experiences

Adjunct Lecturer
Department of 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

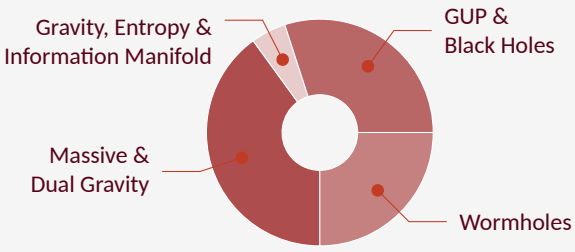
Graduate Summer Research Assistantship Award
Department of Physics,
University of Miami, 2014 – 2020

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 ●●●●●
- Maple (with GRTensor) ●●●●●
- LaTeX (with TeXmaker) ●●●●●
- LINUX (with BASH) ●●●●◐
- PYTHON (with SciPy) ●●●●○
- Machine Learning (Scikit) ●●●●○
- Deep Learning (Pytorch) ●●●◐○
- MD Simulation (Gromacs) ●●●○○

Conferences & Seminars

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

Weekly Graduate Mathematical Physics Seminars
Title: Applications of Differential Forms in Physics

Department of Physics, Cairo University

2009 – 2010 — Giza, Egypt

Nondegree Courses

Intro. to Python Programming

Udacity

Sep 2020 — Online

Introduction to Machine Learning

Coursera, authorized by Duke University

May 2021 — 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.

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

Publications

Journal Articles

- 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 Alshal, Hassan (Nov. 2022). "Newtonian Gravity on an N-Sphere". In: arXiv: 2211.08236 [physics.class-ph].

- Ali, Ahmed Farag, Emmanuel Moulay, Kimet Jusufi, and Alshal, Hassan (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, Alshal, Hassan, Ahmed Farag Ali, and Elias C. Vagenas (Aug. 2022). "Gravitational Observations and LQGUP". in: arXiv: 2208.04686 [gr-qc].

- Danehkar, Ashkbiz, Alshal, Hassan, 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 Alshal, H. (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 Alshal, Hassan (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 Alshal, H. (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 Alshal, H. (2019). "Massive Dual Spin 2 Revisited". In: *Nucl. Phys.* B948, p. 114777. DOI: 10.1016/j.nuclphysb.2019.114777. arXiv: 1907.11532 [hep-th].

- Vagenas, Elias C., Ahmed Farag Ali, and Alshal, Hassan (2019). "Massless charged particles, naked singularity, and GUP in Reissner-Nordström-de Sitter-like spacetime". In: *Phys. Rev.* D99. 8, p. 084013. DOI: 10.1103/PhysRevD.99.084013. arXiv: 1903.09634 [hep-th].

- Vagenas, Elias C., Ahmed Farag Ali, Mohammed Hemeda, and **Alshal, Hassan** (2019). "Linear and Quadratic GUP, Liouville Theorem, Cosmological Constant, and Brick Wall Entropy". In: *Eur. Phys. J.* C79. 5, p. 398. DOI: 10.1140/epjc/s10052-019-6908-z. arXiv: 1903.08494 [hep-th].

- Al-Modlej, Abeer, Salwa Alsaleh, **Alshal, Hassan**, 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 **Alshal, Hassan** (2019). "GUP and the no-cloning theorem". In: *Eur. Phys. J.* C79. 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., **Alshal, H.**, 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].