

Ioannis Florakis

Curriculum Vitae

Section of Theoretical Physics,
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Personal information

place of birth Athens, Greece
citizenship Hellenic
Languages Greek, English, French, German

Employment

July 2018-today **Assistant Professor**, *Theoretical Physics Section, Physics Department, University of Ioannina (Greece).*

Sept 2016- July 2018 **Lagrange Fellow**, *Laboratoire de Physique Théorique et Hautes Energies (LPTHE)*, University of Paris 6, Pierre et Marie Curie (France).

Sept 2014-2016 **CERN Fellow**, *CERN Theory Division*, Geneva (Switzerland).

Sept 2011-2014 **Postdoc at the Max-Planck-Institut für Physik**, *Heisenberg Institute*, Munich (Germany).

Jan-Jul 2011 **Associate Scientist**, *CERN Theory Division*, Geneva, (MassTeV grant).

2008-2010 **Teaching Assistant (Moniteur)**, *member of the teaching and research personnel of CIES Jussieu, University of Paris 6 - Pierre et Marie Curie*, Courses of General Physics, Mechanics & elements of Hydrodynamics.

2007-2011 **Doctoral Candidate**, *Laboratoire de Physique Théorique (LPTENS), Ecole Normale Supérieure*, Paris.

Education

2007-2011 **Doctoral degree in Theoretical Physics**, *Laboratoire de Physique Théorique (LPTENS)*, Ecole Normale Supérieure (diploma issued by the University of Paris 6), France.

2006–2007 **Master degree in Theoretical Physics**, *Laboratoire de Physique Théorique (LPTENS)*, Ecole Normale Supérieure (diploma issued by the University of Paris 6), France.

2001–2006 **Diploma in Physics**, *National and Kapodistrian University of Athens*, Greece.

Research interests

- Spontaneous breaking of supersymmetry in gauge, string and supergravity theories
- Quantum corrections to BPS and non-BPS couplings in string effective actions

- Perturbation theory, IR renormalisation and higher loop (genus) $g = 2, 3$ amplitudes in string theory
- String thermodynamics and cosmology
- Topological string amplitudes and connection with $\mathcal{N} = 2$ gauge theories
- Non-geometric string backgrounds with fluxes & gauged supergravity

Doctoral thesis

title Théorie des Cordes et Applications Phénoménologiques et Cosmologiques, (*String Theory and Applications to Phenomenology and Cosmology*)
 advisor Dr. Costas Kounnas (Directeur de Recherche, CNRS, Ecole Normale Supérieure)

Other experience

2013- Local organising committee, Corfu Summer Institutes
 2011-2014 and Associate member, CERN Theory Division (Switzerland)
 2016-today
 2007 Research internship at the Linear Accelerator Laboratory, Orsay, France

Fellowships and honours

2016-2018 Lagrange Fellowship (Paris)
 2014-2016 CERN Fellowship
 2011 European *MassTeV* Fellowship, CERN Theory Division
 2007-2010 Fellowship by the French Ministry of Higher Education and Research
 2006-2007 Fellow of the French Government (*BGF*)
 <2006 State Prize for excellence during undergraduate studies (IKY)
 2000 State Prize for excellence in high school

Referee activity for international journals

Nuclear Physics B.
Physics Letters B.
Journal of High Energy Physics (JHEP).
European Physical Journal C.
International Journal of Modern Physics.

Supervision of Master Thesis

2017 Master thesis of Nina Javerzat, student at the Master 2 programme of Ecole Normale Supérieure, with title "Amplitudes à une boucle en théorie des cordes" (One loop amplitudes in string theory)

Publications and preprints

- 2017 I. Florakis, I. García-Etxebarria, D. Lüst and D. Regalado, *2d Orbifolds with Exotic Supersymmetry*, published in *Journal of High Energy Physics*, JHEP **1802** (2018), arXiv:1712.04318 [hep-th].
- 2017 I. Florakis and I. Rizos, *A Solution to the Decompactification Problem in Chiral Heterotic Strings*, published in *Nuclear Physics B*, NPB **921** (2017) arXiv:1703.09272 [hep-th].
- 2016 I. Florakis, *Gravitational Threshold Corrections in Non-Supersymmetric Heterotic Strings*, published in *Nuclear Physics B*, NPB **916** (2017), arXiv:1611.10323 [hep-th].
- 2016 I. Florakis and I. Rizos, *Chiral Heterotic Strings with Positive Cosmological Constant*, published in *Nuclear Physics B*, NPB **913** (2016) arXiv:1608.04582 [hep-th].
- 2016 I. Florakis and B. Pioline, *On the Rankin-Selberg method for higher genus string amplitudes*, published in *Communications in Number Theory & Physics*, Vol. 11, No. 2 (2017), arXiv:1602.00308 [hep-th].
- 2015 I. Florakis and A. Zein Assi, $\mathcal{N} = 2^*$ *from Topological Amplitudes in String Theory*, published in *Nuclear Physics B*, NPB **909** (2016), arXiv:1511.02887
- 2015 C. Angelantonj, I. Florakis and M. Tsulaia, *Generalised universality of gauge thresholds in heterotic vacua with and without supersymmetry*, published in *Nuclear Physics B*, NPB **900** (2015), arXiv:1509.00027
- 2015 I. Antoniadis, I. Florakis, S. Hohenegger, K. S. Narain and A. Z. Assi, *Probing the Moduli Dependence of Refined Topological Amplitudes*, published in *Nuclear Physics B*, NPB **901** (2015), arXiv:1508.01477
- 2015 C. Angelantonj, I. Florakis, and B. Pioline, *Threshold corrections, generalised prepotentials and Eichler integrals*, published in *Nuclear Physics B*, NPB **897** (2015) arXiv:1502.00007
- 2014 I. Florakis, D. Sorokin and M. Tsulaia, *Higher Spins in Hyper-Superspace*, published in *Nuclear Physics B*, NPB **890** (2014), arXiv:1408.6675
- 2014 C. Angelantonj, I. Florakis and M. Tsulaia, *Universality of Gauge Thresholds in Non-Supersymmetric Heterotic Vacua*, published in *Physics Letters B*, PLB **736** (2014), arXiv:1407.8023
- 2014 I. Florakis, D. Sorokin and M. Tsulaia, *Higher Spins in Hyperspace*, published in *Journal of High Energy Physics*, JHEP **1407** (2014), arXiv:1401.1645
- 2013 I. Antoniadis, I. Florakis, S. Hohenegger, K. S. Narain and A. Z. Assi, *Non-Perturbative Nekrasov Partition Function from String Theory*, published in *Nuclear Physics B*, NPB **880** (2014), arXiv:1309.6688
- 2013 C. Condeescu, I. Florakis, C. Kounnas and D. Lüst, *Gauged supergravities and non-geometric Q/R-fluxes from asymmetric orbifold CFT's*, published in *Journal of High Energy Physics*, JHEP **1310** (2013), arXiv:1307.0999

- 2013 C. Angelantonj, I. Florakis and B. Pioline, *Rankin-Selberg methods for closed strings on orbifolds*, published in *Journal of High Energy Physics*, JHEP **1307** (2013), arXiv:1304.4271
- 2013 I. Antoniadis, I. Florakis, S. Hohenegger, K. S. Narain and A. Z. Assi, *Worldsheet Realization of the Refined Topological String*, published in *Nuclear Physics B*, NPB **875** (2013), arXiv:1302.6993
- 2012 C. Angelantonj, I. Florakis and B. Pioline, *One-Loop BPS amplitudes as BPS-state sums*, published in *Journal of High Energy Physics*, JHEP **1206** (2012), arXiv:1203.0566
- 2012 C. Condeescu, I. Florakis and D. Lüst, *Asymmetric Orbifolds, Non-Geometric Fluxes and Non-Commutativity in Closed String Theory*, published in *Journal of High Energy Physics*, JHEP **1204** (2012), arXiv:1202.6366
- 2011 C. Angelantonj, I. Florakis and B. Pioline, *A new look at one-loop integrals in string theory*, published in *Communications in Number Theory and Physics*, CNTP **6** (2012), arXiv:1110.5318
- 2011 A. E. Faraggi, I. Florakis, T. Mohaupt and M. Tsulaia, *Conformal Aspects of Spinor-Vector Duality*, published in *Nuclear Physics B*, NPB **848** (2011), arXiv:1101.4194
- 2010 I. Florakis, C. Kounnas, H. Partouche and N. Toumbas, *Non-Singular String Cosmology in a 2d Hybrid model*, published in *Nuclear Physics B*, NPB **844** (2011), arXiv:1008.5129
- 2010 I. Florakis, C. Kounnas and N. Toumbas, *Marginal Deformations of Vacua with Massive boson-fermion Degeneracy Symmetry*, published in *Nuclear Physics B*, NPB **873** (2010), arXiv:1002.2427
- 2009 I. Florakis and C. Kounnas, *Orbifold Symmetry Reductions of Massive Boson-Fermion Degeneracy*, published in *Nuclear Physics B*, NPB **820** (2009), arXiv:0901.3055

Conference proceedings - reviews

- 2018 I. Florakis, *Supersymmetry breaking in heterotic strings and the decompactification problem*, published in *Proceedings of Science*, PoS CORFU **2017** (2018)
- 2016 C. Angelantonj, I. Florakis and M. Tsulaia, *Universality in radiative corrections for non-supersymmetric heterotic vacua*, published in *Proceedings of Science*, PoS PLANCK **2015** (2016)
- 2015 I. Florakis, *Universality of radiative corrections to gauge couplings for strings with spontaneously broken supersymmetry*, published in *Journal of Physics: Conference Series*, J. Phys. Conf. Ser. **631** (2015), arXiv:1502.07537
- 2014 I. Florakis and A. Zein Assi, *$N=2$ string amplitudes and the Omega background*, published in *Fortschritte der Physik*, Fortschr. Phys. **1-10** (2014), arXiv:1402.2974
- 2013 I. Florakis, *One-loop Amplitudes as BPS state sums*, published in *Proceedings of Science*, PoS (2012)101, arXiv:1303.3788

- 2010 I. Florakis, *String Vacua with Massive boson-fermion Degeneracy & Non-Singular Cosmology*, published in *Fortschritte der Physik*, Fortschr. Phys. **59** (2011), arXiv:1010.5126
- 2010 I. Florakis, *String Models with Massive boson-fermion Degeneracy*, published in *Fortschritte der Physik*, Fortschr. Phys. **58** (2010), arXiv:1001.2589

Long-term visits

02-03/13, 02/14 **CERN Theory Division, Geneva.**

Lecture Series Presented

- Nov 2015 **Lecture on “New ideas on Strings and Cosmology”**, *CERN Greek Teachers’ Training Programme, 2015.*
- Nov 2014 **Lecture on “Strings, Gravity and Cosmology: a modern approach”**, *CERN Greek Teachers’ Training Programme, 2014.*
- May 2014 **Lectures on “New methods for $\mathcal{N} = 2$ amplitudes in string theory”**, Ludwig-Maximilian University, Munich (Germany), Invited series of 5 lectures.
- Nov 2010 **Lectures on String Thermodynamics and Non-Singular cosmology**, University of Liverpool, Liverpool (UK), Invited series of 4 lectures.

Talks

- Jul 2018 **Supersymmetry breaking in Heterotic Strings and corrections to gauge couplings**, ICNFP 2018 Conference - Kolymbari (Greece), Invited talk.
- Dec 2017 **Supersymmetry breaking in String Theory and Radiative Corrections**, Symposium in honour of Fokion Hadjoannou - University of Athens (Greece), Invited talk.
- Sep 2017 **Supersymmetry breaking in Heterotic Strings and the Decompactification Problem**, Testing Fundamental Physics Principles - Corfu Conference (Greece), Invited talk.
- Feb 2017 **Supersymmetry breaking and radiative corrections in String Theory**, University of Ioannina (Greece), Invited talk.
- Sep 2016 **Heterotic Strings with Positive Cosmological Constant**, Recent Developments in Strings & Gravity, Corfu Conference (Greece), Invited talk.
- Jun 2016 **Quantum corrections to couplings in non-supersymmetric strings**, String Pheno 2016 Conference, Ioannina (Greece), Invited talk.
- May 2016 **Quantum corrections to gauge couplings in non-supersymmetric string theory**, University of Ioannina (Greece), Invited talk.
- Jan 2016 **Topological amplitudes and $N = 2^*$ in string theory**, ICTP Trieste (Italy), Invited talk.
- Sep 2015 **Quantum corrections to gauge couplings in non-supersymmetric string theory**, University of Athens (Greece), Invited talk.

- Sep 2015 **The universal structure of quantum corrections to gauge couplings in strings with broken supersymmetry**, Humboldt Kolleg 2015, Corfu (Greece), Invited talk.
- Jul 2015 **Quantum corrections to effective couplings in string theories with spontaneous supersymmetry breaking**, 8th Regional Meeting in String Theory, Nafplion (Greece), Invited talk.
- May 2015 **Spontaneous supersymmetry breaking in string theory and corrections to gauge couplings**, Planck 2015 - Ioannina (Greece), Invited talk.
- May 2015 **Quantum corrections to gauge couplings and universality in strings with spontaneously broken supersymmetry**, ICTP Trieste (Italy), Invited talk.
- Apr 2015 **Spontaneously supersymmetry breaking in string theory and threshold corrections**, HEP 2015 Conference, University of Athens (Greece), Invited talk.
- Dec 2014 **Radiative corrections to gauge couplings in string theories with spontaneously broken supersymmetry**, Theoretical Physics Workshop, University of Athens (Greece), Invited talk.
- Dec 2014 **Universality of radiative corrections to gauge couplings for strings with spontaneously broken supersymmetry**, DISCRETE 2014 Conference (London), Invited talk.
- Nov 2014 **Radiative corrections and spontaneously supersymmetry breaking in string theory**, Ludwig Maximilians University, Munich (Germany), Invited talk.
- Oct 2014 **Radiative corrections to gauge couplings string vacua with spontaneously broken supersymmetry**, University of Torino, Torino (Italy), Invited talk.
- Sept 2014 **Radiative corrections to gauge couplings string theories with spontaneously broken supersymmetry**, National Technical University of Athens, (Greece), Invited talk.
- Sept 2014 **Universality of gauge thresholds for heterotic vacua with spontaneously broken supersymmetry**, Workshop on “Quantum Fields and Strings 2014, Corfu Summer Institute (Greece), Invited talk.
- May 2014 **Gauged Supergravities & Non-Geometric fluxes from asymmetric orbifolds**, Bayrischzell Workshop 2014, Bavaria (Germany), Invited talk.
- Apr 2014 **One-Loop Amplitudes in String Theory : a refined approach**, Università di Roma - Tor Vergata, Rome (Italy), Invited talk.
- Mar 2014 **Aspects of String Theory and applications**, Institute of Nuclear Physics, Lyon (France), Invited talk.
- Jan 2014 **A Stringy realization of the Ω background from $\mathcal{N} = 2$ amplitudes**, Università di Milano - Bicocca, Milan (Italy), Invited talk.

- Dec 2013 **One-Loop Amplitudes in String Theory : a refined approach**, Max Planck Institut für Gravitationsphysik (Albert Einstein Institute), Potsdam/Golm (Germany), Invited talk.
- Oct 2013 **Gauged Supergravities & Non-geometric Fluxes from Asymmetric Orbifolds**, Athens Polytechnic University (NTUA), Greece, Invited talk.
- Oct 2013 **Nekrasov Backgrounds from string amplitudes**, Joint ULB, VUB, KULeuven, UMons seminar, Brussels., Invited talk.
- Oct 2013 **$\mathcal{N} = 2$ String Amplitudes and the Ω background**, Joint ERC workshop on “MassTeV, Superfields and Strings & Gravity”, Munich, Invited talk.
- Sep 2013 **Nekrasov Backgrounds from $\mathcal{N} = 2$ String Amplitudes**, DESY Theory Workshop: “Non-perturbative QFT: Methods and Applications”, Hamburg, Invited talk.
- Sep 2013 **$\mathcal{N} = 2$ String Amplitudes & Nekrasov Backgrounds**, Corfu Summer Institute (Greece), Invited talk.
- Jun 2013 **$\mathcal{N} = 2$ String Amplitudes and the Refined Topological String**, CERN Theory Seminar (Geneva), Invited talk.
- May 2013 **$\mathcal{N} = 2$ String Amplitudes and the Refined Topological String**, Rencontres Théoriciennes, Institut Henri Poincaré (Paris), Invited talk.
- Mar 2013 **$\mathcal{N} = 2$ String Amplitudes and the Refined Topological String**, University of Rome “Tor Vergata”, Invited talk.
- Mar 2013 **Novel methods for $\mathcal{N} = 2$ BPS-saturated amplitudes in String Theory**, XXV Workshop: “Beyond the Standard Model”, Bad Honnef (Germany).
- Oct 2012 **A new look at One-Loop Amplitudes in String Theory**, University of Torino, Invited talk.
- Sep 2012 **A new look at One-Loop Amplitudes in String Theory**, Symposium : Kounnas-Fest “Tales on Supergravity, Strings and QCD” (Cyprus), Invited talk.
- Sep 2012 **One-Loop Amplitudes as BPS-state sums**, Corfu Summer Institute (Greece).
- Jun 2012 **One-Loop Amplitudes as BPS-state sums**, Laboratoire de Physique Théorique, Ecole Normale Supérieure (Paris), Invited talk.
- Apr 2012 **One-Loop Amplitudes as BPS-state sums**, University of Athens (Greece), Invited talk.
- Mar 2012 **One-Loop Amplitudes as BPS-state sums**, University of Cyprus, Invited talk.
- Dec 2010 **String Vacua with Massive boson-fermion Degeneracy & Non-Singular Cosmology**, Imperial College (London), Invited talk.
- Nov 2010 **String Vacua with Massive boson-fermion Degeneracy & Non-Singular Cosmology**, University of Rome “Tor Vergata”, Invited talk.
- Nov 2010 **Lectures on String Thermodynamics and & Non-Singular Cosmology**, University of Liverpool, Invited series of lectures.

- Oct 2010 **String Vacua with Massive boson-fermion Degeneracy & Non-Singular Cosmology**, University of Amsterdam, Invited talk.
- Oct 2010 **String Vacua with Massive boson-fermion Degeneracy & Non-Singular Cosmology**, University of Torino, Invited talk.
- Oct 2010 **String Vacua with Massive boson-fermion Degeneracy & Non-Singular Cosmology**, Arnold Sommerfeld Centre - LMU Munich, Invited talk.
- Sep 2010 **Marginal Deformations of Vacua with Massive boson-fermion Degeneracy**, Workshop on Cosmology and Strings - Corfu Summer Institute (Greece).
- Jan 2010 **String Models with Massive Boson-Fermion Degeneracy Symmetry**, National Centre for Scientific Research “Demokritos” (Greece), Invited talk.
- Sep 2009 **String Models with Massive Boson-Fermion Degeneracy**, Workshop on Cosmology and Strings - Corfu Summer Institute (Greece).
- Sep 2009 **String Models with Massive Boson-Fermion Degeneracy**, 47th International School of Subnuclear Physics - EMCSC Erice (Sicily).

Selected schools and conferences

- Jul 2018 **ICNFP 2018**, Kolymbari (Greece).
 - Jun 2016 **String Pheno 2016**, Ioannina (Greece).
 - May 2015 **Planck 2015**, Ioannina (Greece).
 - Dec 2014 **DISCRETE 2014**, *Fourth Symposium on Prospects in the Physics of Discrete Symmetries*, London (United Kingdom).
 - May 2014 **Bayrischzell Workshop “Quantized Geometry and Physics”**, Bavaria (Germany).
 - Oct 2013 **Joint ERC workshop on “MassTeV, Superfields and Strings & Gravity”**, Arnold Sommerfeld Centre, LMU Munich.
 - Sep 2013 **DESY Theory Workshop: “Non-perturbative QFT: Methods and Applications”**, Hamburg (Germany).
 - Mar 2013 **XXV Workshop: “Beyond the Standard Model”**, Bad Honnef (Germany).
 - 2009-2016 **CERN Winter Schools on Supergravity, Strings and Gauge Theories**, CERN (Geneva).
 - Nov 2012 **ASC Workshop “Geometry and Physics”**, Max Planck Institute for Physics (Munich).
 - Jul 2012 **Strings 2012**, Ludwig Maximilians University (Munich).
 - Jul 2012 **String Phenomenology TH Institute**, CERN (Geneva).
 - Jul 2012 **62nd Lindau Nobel Laureate Meeting on “Physics”**, Lindau (Germany), representing Greece.
- Supported by the Onassis Foundation

- Sep 2011 **School on Algebraic Geometry for String Theorists**, Arnold Sommerfeld Centre - LMU Munich.
- Aug 2011 **XLIIIème Institut d'été**, Ecole Normale Supérieure (Paris).
- Jul 2010 **String Pheno 2010**, Collège de France (Paris).
- Jul 2009 **5th Crete Regional Meeting on String Theory**, Kolymbari, Crete (Greece).
- May 2009 **Workshop on Cosmological Frontiers in Fundamental Physics**, Laboratory of Astroparticle Physics and Cosmology (Paris).
- Sep 2008 **4th Young Researchers Network Workshop of the European Superstring Theory Network**, Cyprus.
- Sep-Nov 2007 **Paris-Brussels-Amsterdam Doctoral School**.