Curriculum Vitæ

Nome :	**Laura Maria Andrianopoli**
Nazionalità :	Italian
Birth date and place:	8 January 1969, Turin (Italy)
Present position:	from 01/12/2014 Associate Professor at DISAT, Politecnico di Torino
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Area of Research

Theoretical particle physics, more specifically supergravity, supersymmetry and superstring theory.

Education and Qualifications

- July 1994: *Laurea* in Theoretical Physics at Università di Torino (110/110 e Lode). Supervisor: Prof. Ferdinando Gliozzi; Co-Supervisor: Prof. Riccardo D'Auria

  Title of the Thesis Tesi : "Una nuova rappresentazione per l'accoppiamento dei campi scalari alla supergravità"

- 1994 - 1997: Ph.D. course in Physics at Università di Genova. Supervisor: Prof. C. Imbimbo; Co-Supervisor: Prof. R. D'Auria

  Title of Ph.D. Thesis: "U-duality in supergravity theories and extremal black holes"

- 15/02/1998 - 30/09/1998: "Angelo Della Riccia" Fellowship at Th-Division of CERN, Geneva

- 1/10/1998 - 31/08/2000: Post-Doctoral position at the Th–Division of "K.U.Leuven", in Belgium, under the EU project: TMR ERBFMRXCT96-0045

- 1/09/2000 - 31/10/2002: Post-Doctoral position (Assegnista di Ricerca) at Politecnico di Torino

- 1/11/2002 - 31/10/2004: Fellow of Th-Division at CERN, Geneva

- 1/11/2004 - 31/10/2007: New-Talent Grant of "Museo Storico della Fisica e Centro Studi e Ricerche Enrico Fermi"

- 1/11/2007 - 30/11/2014: Assistant Professor at Politecnico di Torino

- from 1/12/2014: Associate Professor at Politecnico di Torino

Prizes and awards:

- Abilitazione Scientifica Nazionale 2012 as Associate Professor for the S.C. 02/A2 (Theoretical Physics and Fundamental Interactions)
- Invited from Pontificia Universidad de Valparaiso as Visiting Professor in Chile for 3 weeks, in November 2013
- Honored by "Le Scienze" (Italian edition of Scientific American) and Italian President 2006 medal. Motivation: "... for the internationally recognized level of her researches in supergravity".
- First position in the competition for INFN post doctoral positions for italian theoretical physicists (Bando n. 10068/03).

Invited seminars:

1. "On boundary properties of gauged supergravities", at the conference "New Frontiers in Theoretical Physics", Cortona, 28-31 May 2014
2. "On Stationary Black Holes in Four Dimensions", at the University A. Bello of Santiago del Chile, November 2013
3. "On Stationary Black Holes in Four Dimensions", at the University of Concepcion, Chile, November 2013
4. "On Stationary Black Holes in Four Dimensions", at the Pontificia Universidad Catòlica de Valparaso, Chile, November 2013
5. "Type IIB supergravity compactification on $K3xT_2/Z_2$", at University Roma Tor Vergata, November 2012
6. "Verso la gravità quantistica: I buchi neri e la supergravità", at: 'Le Donne nella Scienza', Napoli, March 2008
7. "First Order Description of Black Holes in Moduli Space, at conference SAM2007, Frascati, June 2007
8. "Black Holes and Geometry, at the Avogadro Meeting, Alessandria, December 2006
9. "Gauge Charges from Supergravity: the role of torsion", at the University Roma Tor Vergata, March 2006
10. "Gauge Charges from Supergravity: the role of torsion", at the University Milano-Bicocca, December 2005
11. "Gauge Charges from Supergravity", at the conference "International School of Subnuclear Physics 2005", Erice, September 2005

12. "Sviluppi recenti in Supergravità", at "Convegno Informale di Fisica Teorica (XXVII edizione)", Cortona, May 2005

13. "On the role of torsion in supergravity flux compactifications", at CERN, Geneva, March 2005

14. "No-scale models in supergravity: the Scherk–Schwarz mechanism as a flux compactification with internal torsion", at LAPTH, Annecy, February 2005

15. "No-scale Supergravity, Supersymmetry Breaking and Gauging", at the University of Valencia (Spain), November 2004

16. "No-scale Supergravity, Supersymmetry Breaking and Gauging", at the University of Torino, September 2004

17. "'Dualità, Gauging di Gruppi Piatti in Supergravità 4D e il Meccanismo di Super-Higgs", at the conference "Problemi Attuali di Fisica Teorica", IIASS "E.R.Caianiello", Vietri sul Mare (Italy), April 2003

18. "Gauging of flat groups in four dimensional supergravity", at CERN, Geneva, February 2003

19. "Duality, gauging of flat groups in four dimensional supergravity and the super-Higgs mechanism", at the University of Trieste, February 2003

20. "Supergravità N-estesa e riduzione di supersimmetria", at the University of Napoli, February 2002

21. "Consistent reduction of supergravity", at the University of Halle, Germania, January 2002

22. "$N = 2 \to N = 1$ consistent truncation in $D = 4$ supergravity", at the RTN conference: 'Corfu2001', Corfù, Greece, September 2001

23. "Isometric embeddings of BPS Branes in Flat Spaces with Two Times" at the conferenza: "Quantum aspects of gauge theories, supersymmetry and unification, Paris, September 1999

24. "Multipletti lunghi e corti nella corrispondenza AdS/CFT", at the conference 'Problemi attuali di Fisica Teorica', IIASS E.R.Caianiello, Vietri sul Mare, March 1999

25. "Symplectic Geometry in Extended Supergravities and Extremal Black Holes", at "Workshop on Quantum Aspects of Gauge Theories, Supersymmetry and Unification", Neuchâtel - September 1997

26. "Supergravità e Buchi Neri", at Politecnico di Torino, May 1997

27. "Cariche Centrali in Supergravità e Buchi Neri", at the University of Milano, May 1997

Organizational Activity:

- I created (together with the collegues P.A. Grassi and G. Dall'Agata) the format of "Avogadro Meeting on Theoretical Physics" and I participated to the scientific and organising board for the first 3 editions (2005 2006 - 2007), held at Facoltà di Scienze MM.FF.NN. dellUniversità del Piemonte Orientale (the format was appreciated and the meeting continues on an annual basis).
- I participated to the organizing board for the Colloquium on the experiment LHC at CERN, held at Politecnico di Torino the 15/01/2009.
- I participated to the organizing board for the international conference "A String concert in Torino - A Meeting on Supergravity and Superstrings on the Occasion of Riccardo D'Auria's 70th Birthday, at Politecnico di Torino, 22-23/04/2010.

Teaching Activity

- Teaching in Graduate Courses of Italian Universities:
  - Exercises sessions in the course Physics 1, Politecnico di Torino A.A. 1996-97;
  - Physics 2 at Politecnico di Torino, A.A. 2007-2008
  - Physics 1 at Politecnico di Torino, A.A. 2008-2009, 2011-2012, 2012-2013, 2013 2014, 2014 - 2015.
  - Exercises and laboratory sessions at course Physics 1 at Politecnico di Torino, A.A. 2010-2011
- Teaching in Ph.D. Courses:
  - "Elements of Quantum Electrodynamics" at Politecnico di Torino (2015)
  - "Minicourse On Black Holes and Supergravity", at the University A. Bello of Santiago del Chile, at the University of Concepcion and at the Pontificia Universidad Catòlica de Valparaiso, in Chile, November 2013
  - "Introduction to supersymmetry", at Politecnico di Torino, on a bi-annual basis until 2013.
  - "Supergravità in 4 dimensions" at the Ph.D. course in Physics at the University of Milano, A.A. 2002-2003;
  - "Electric-magnetic duality in supersymmetric theories" at the Ph.D. course in Physics at the University of Torino, A.A. 2000-2001;
  - "Constrained Dynamics" at the Ph.D. course in Theoretical Physics at the University K.U.Leuven (Belgium), A.A. 1999-2000.

- Supervisor Activity:
  - I was supervisor for the Laurea theses of the students Floriana Gargiulo and Paolo Angelino at University of Torino, A.A. 1999-2000:
  - I followed the research activity and Ph.D. thesis of the following students of my research group at Politecnico: Emanuele Orazi, Paolo Giaccone, Nelson Merino, Felip Nadal.
  - Presently I am the tutor of the following Ph.D. students: Patrick Concha, Evelyn Rodriguez, Lucrezia Ravera.

Services and charges in Italian and Foreign Universities:

- I participated to the evaluation committee for the attribution of a post-doctoral position at INFN-Torino in the INFN Fellowship Programme 2012/2013 (Bando id1009).
- I participated to the evaluation committee for the Ph.D. final exam of the following students:
  - Pietro Galli, Universiy of Valencia (Spain), September 2013, title of the Ph.D. thesis: "Non supersymmetric black-hole solutions of N=2, D=4 Supergravity" .
  - Nelson Merino Moncada, Unlverslty of Concepcion (Chile), March 2012, title of the Ph.D. thesis: "Non-trivial Relations Between Lie Algebras and Its Physical Applications".
  - Riccardo Nicoletti, Universlty of Torino, November 2011, title of the Ph.D. thesis: "A Geometric Approach to Supergravity Theories"
  - Felip Nadal, University of Valencia, (Spain), september 2012
- I am referee for various scientific journals among which, recently: Physics Letters B, Letters in Mathematical Physics, Classical and Quantum Gravity, International Journal of Theoretical Physics, Indian Journal of Physics, Entropy.

Scientific Research Activity:

My research activity is focussed on supergravity and superstring/M theories, with the aim of understanding the physics of the fundamental interactions in a unitary quantum theory.

In this context, my research work is articulated in various, inter-related, directions, and in particular:

A. The explicit construction of supergravity models, where I focussed

   i) on the building of new supersymmetry-invariant theories,

ii) on the analysis of gaugings of extended supergravities corresponding to new, phenomenologically interesting, vacua.

B. The analysis of geometric and algebraic properties allowing to single out relations among different theories:

i) In a series of papers we recognized an underlying geometrical structure common to the moduli space of every supergravity theories with at least 8 supercharges, and we gave an algebraic characterization (in terms of solvable Lie algebras) to each scalar field of these theories; such results were then applied as an essential ingredient in model building and in the study of black-hole solutions.

ii) In another series of papers I focussed on a group-theoretical approach to the AdS/CFT correspondence. Making use of the notion of harmonic superspace we analized how the different bulk states of string theory on a AdS background can be described in terms of short and long representations of the dual superconformal theory defined at its boundary; such results were among the first kinematical tests of the AdS/CFT duality.

iii) In another series of collaborations we developed and applied a general algorithm to consistently implement supersymmetry breaking in supergravity.

iv) Very recently we found an interpolating lagrangian relating Born-Infeld (and its abelian n-field generalization) to a manifestly electric-magnetic duality-invariant Lagrangian (linear in the squared field-strengths), which can be embedded in a N=2-supersymmetric theory. In our formalism, the topological requirements on the charges for partial supersymmetry breaking, corresponding to the Born-Infeld phase, are manifest."

C. The study of black-hole solutions, where

i) we used the algebraic relations cited at the point B.i) above to determine the Bekenstein-Hawking entropy of extremal black holes in various models of extended supergravity;

ii) we understood the first-order formalism for static extremal solutions in a Hamiltonian formulation, that allowed us to clarify many properties of the fake superpotential and to find its generalization to non-extremal solutions;

iii) we extended the analysis to stationary black holes, finding the general solution in a large class of non-extremal black holes with the corresponding extremal limits.

Last update: January 2015