

FEDERICO PIAZZA: CURRICULUM VITAE

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LANGUAGES: Italian (native), English (fluent), French (good), Spanish (basic knowledge)

Positions

- *Since October 2006*: Post-doctoral fellowship at Perimeter Institute.
- *2005-2006*: Post-doctoral Marie Curie Fellowship at the Institute of Cosmology and Gravitation, University of Portsmouth.
- *2003-2004*: Post-doc at the University of Milano Bicocca.
- *1998-2002*: Università di Milano Bicocca, PhD in Physics: *Gravity and Cosmology of the dilaton at strong coupling*. (Thesis Advisors: Luciano Girardello and Gabriele Veneziano).

Selected Visiting

- Canadian Institute for Theoretical Astrophysics (CITA), Toronto. (*October 2009, January 2010*).
- Department of Physics, University of Philadelphia. (*1 - 20 September 2009*).
- Galileo Galilei Institute, Florence, Italy. Workshop “New Horizons for Modern Cosmology”. (*18 Jan – 10 Feb 2009*)
- Department of Physics, University of California Berkeley. Host: Raphael Bousso (*4 - 11 September 2008*).
- Centre de Physique Théorique (CPT), Marseille (*23 - 30 May 2008*)
- Perimeter Institute, Waterloo Ontario. (*15 - 30 January 2006*).
- CERN, Switzerland. Host: Gabriele Veneziano (*11 - 30 April 2004*).
- Institute of Cosmology and Gravitation, University of Portsmouth, UK. Visiting fellowship “Della Riccia”. Host: David Wands (*March - December 2003*).
- Observatoire Astronomique Marseille-Provence. Host: Christian Marinoni (*26 February - 15 March 2003*)
- Laboratoire de Physique Théorique, Université Paris Sud, Orsay, France. Host: Gabriele Veneziano (*January 2001 - November 2001*).

Supervising Experience and Responsibilities

- *May-August 2009*: Co-supervisor of Jennifer Lin, visiting summer student at Perimeter Institute.
- *2008-2009*: Local supervisor (and referee) for Hongbao Zhang, a visiting PhD student at Perimeter Institute.
- *May-August 2007*: Undergrad. thesis supervisor (and referee) of Fabio Costa, visiting student at Perimeter.
- *2006*: Supervising Elisabetta Majerotto (PhD student) in part of her research work, ICG, Portsmouth.
- Referee for Physical Review Letters, Physical Review D, JHEP, Foundations of Physics, Journal of Physics A, General Relativity and Gravitation.

Teaching

- **Perimeter Institute**

- Tutor, Summer School: Exploring the Cosmological Frontiers June 24 - July 1 (2009)
- Mentor, International School for Young Physicists, (Summer 2007 and 2008, 12 hours in total).

- **Institute of Cosmology and Gravitation, Portsmouth University**

- Instructor, “Quantum Field Theory”, PhD Course (Feb. 2006, 8 hours)
- Instructor, “Mathematical methods in physics”, PhD Course (Dec. 2003, Jan. 2005 and Nov. 2005, 48 hours in total)

- **University of Milano Bicocca**

- Guest Lecturer, “Black hole physics and global issues in General Relativity” (Jan. 2002, 6 hours), “Cosmology and Inflation” (May 2003, 6 hours), General relativity for undergraduates, Prof. Silvia Penati.

Selected Papers

1. **“Sub-eV scalar dark matter through the super-renormalizable Higgs portal”**
F. Piazza and M. Pospelov, arXiv:1003.2313 [hep-ph]
2. **“The IR-Completion of Gravity: What happens at Hubble Scales?”**
F. Piazza, New J. Phys. **11**, 113050 (2009) [arXiv:0907.0765 [hep-th]] [SPIRES entry](#)
3. **“Rapidly-Varying Speed of Sound, Scale Invariance and Non-Gaussian Signatures”**
J. Khoury and F. Piazza
JCAP **0907**, 026 (2009) [arXiv:0811.3633 [hep-th]] [SPIRES entry](#)
4. **“A Renormalized Thermal Entropy in Quantum Field Theory”**
S. Cacciatori, F. Costa and F. Piazza
Phys. Rev. D **79**, 025006 (2009) [arXiv:0803.4087] [SPIRES entry](#)
5. **“Measuring deviations from a cosmological constant: a field-space parameterization”**
R. Crittenden, E. Majerotto and F. Piazza
Phys. Rev. Lett. **98**, 251301 (2007) [arXiv:astro-ph/0702003] [SPIRES entry](#)
6. **“Glimmers of a pre-geometric perspective”**
F. Piazza, Found. Phys. **40**, 239 (2010) [arXiv:hep-th/0506124] [SPIRES entry](#)
7. **“Dilatonic ghost condensate as dark energy”**
F. Piazza and S. Tsujikawa
JCAP **0407**, 004 (2004) [arXiv:hep-th/0405054] [SPIRES entry](#)
8. **“Model for gravitational interaction between dark matter and baryons”**
F. Piazza and C. Marinoni
Phys. Rev. Lett. **91**, 141301 (2003) [arXiv:hep-ph/0304228] [SPIRES entry](#)
9. **“Violations of the equivalence principle in a dilaton-runaway scenario”**
T. Damour, F. Piazza and G. Veneziano
Phys. Rev. D **66**, 046007 (2002) [arXiv:hep-th/0205111] [SPIRES entry](#)
10. **“Runaway dilaton and equivalence principle violations”**
T. Damour, F. Piazza and G. Veneziano
Phys. Rev. Lett. **89**, 081601 (2002) [arXiv:gr-qc/0204094] [SPIRES entry](#)
11. **“Quintessence as a run-away dilaton”**
M. Gasperini, F. Piazza and G. Veneziano
Phys. Rev. D **65**, 023508 (2002) [arXiv:gr-qc/0108016] [SPIRES entry](#)

Press Releases

- **“Et si Newton n’avait pas tout prévu?”** (“And if Newton had not foreseen everything?”)
Cécile Bonneau, *Science & Vie*, **1038** 54 (March 2004).
- **“Revising Gravity”**
K. Krieger, [Physical Review Focus](#) (October 2003)

Invited Talks

1. **“Modifying GR in the Infra-Red with the Ultra-Strong Equivalence Principle”**
IHES, Paris, March 23, 2010.
2. **“The IR-completion of Gravity: What happens at Hubble scales?”**
“Emergent Gravity IV” August 24-28 2009, University of British Columbia, Vancouver.
3. **“Modifying Gravity in the Infra-Red by imposing an Ultra-Strong equivalence principle”**
“New Prospects for Solving the Cosmological Constant Problem”, Perimeter Institute, May 25-27, 2009
4. **“Which space-time actually emerges? The world as seen from inside a spin system”**
“Emergent Gravity”, MIT, Boston, August 25-29, 2008
5. **“Particle detector models, thermal entropy and localization”**
(String Theory-) Seminar, Department of Physics, UCB, Berkeley, September 9, 2008
6. **“Coupling variations and equivalence principle violations in string inspired scenarios”**
“The Search for Variations of Fundamental Couplings and Mass Scales”
Perimeter Institute of Theoretical Physics, Waterloo, July 14 - 18, 2008 [PIRSA \(recorded seminars archive\)](#)
7. **“Particle Detectors, the Frog Principle and the Unruh Effect”**
“Hot topics in Modern Cosmology” Cargèse (Corse) May 12-17, 2008
8. **“Localization in semi-classical gravity”**
“Quantum Information in Quantum Gravity”, Perimeter Institute, December 8 - 10, 2007
9. **“Measuring deviations from a cosmological constant: a slow-roll paradigm for dark energy”**
Workshop “Facts and Fictions in Cosmology”, Sils Maria (Switzerland), March 26-April 2, 2006
10. **“Dark Energy and α variations”**
“Dark Energy Day”, Milano-Bicocca University, November 22, 2002
11. **“Cosmology and gravity of the dilaton at strong coupling”**
“String/Brane Cosmology”, IHES and Université de Paris-Sud, Orsay (France) September 23-27, 2002

Selected Talks

1. **“Modifying Gravity in the Infra-Red by imposing an Ultra-Strong equivalence principle”**
 - Imperial College, London, 16/12/2009
 - Department of Physics, University of Columbia, NY, 07/12/2009
 - CITA, Toronto, 30/10/2009
 - Department of Physics, University of Philadelphia, 09/09/2009
 - Department of Physics, University of Milan Bicocca, July 2009.
2. **“Scale invariant spectrum and rapidly varying speed of sound”**
 - talk given at PI-CITA day, Toronto, 19/5/2009
 - Workshop “New Horizons for Modern Cosmology” Galileo Galilei Institute, Florence (Italy), 2/2/2009
 - talk given at ICG, Portsmouth, 15/1/2009

3. **“Regions of space as subsystems: entropy and semiclassical gravity”**
 - “DICE2008”, Castiglione (Italy), September 22-26, 2008
 - “From Quantum to Emergent Gravity: Theory and Phenomenology”, SISSA, Trieste, June 11-15, 2007
4. **“Particle Detector Model questions the Unruh Effect”**
 - Spontaneous informal discussion
 - Perimeter Institute of Theoretical Physics, Waterloo, April 30, 2008 [PIRSA \(recorded seminars archive\)](#)
5. **“Enhanced gravitational scattering from large extra dimensions”**
 - “New Views of the Universe” Chicago, December 8-13, 2005
6. **“Regions of space as subsystems”**
 - “XXVIII Spanish Relativity Meeting”, Oviedo (Spain) September 2005
7. **“Baryons and Dark Matter: a modification of Gravity at subgalactic scales”**
 - “Exploring the Universe”, Rencontres de Moriond, La Thuile (Italy), April 4-10, 2004
 - “Where Cosmology and Fundamental Physics meet”, IUFM, Marseille (France), June 23-26, 2003
 - “Physical Cosmology”, Blois (France), June 15-20, 2003
8. **“Dilaton as quintessence”**
 - “International School of Sub-Nuclear Physics”
 - Erice (Italy), September 2001 (Awarded with the “Giulio Racah Scholarship”).
9. **“Gravitational Waves from Charged Dilaton Black Holes”**
 - “Current Problems in Theoretical Physics” Vietri sul Mare (Italy), April 2000

Referees

- Gabriele Veneziano, CERN, Geneva and Collège de France, Paris
gabriele.veneziano@cern.ch, Tel. +33-1-44271147
- Justin Khoury, University of Pennsylvania, Philadelphia, US
jkhoury@sas.upenn.edu, Tel. +1-519-569-7600 x7581
- David Wands, ICG, Portsmouth
david.wands@port.ac.uk, Tel. +44-23-9284-3115
- Maurizio Gasperini, Dipartimento di Fisica, Università di Bari, Italy.
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- Alberto Zaffaroni, Università di Milano Bicocca, Italy.
Alberto.Zaffaroni@mib.infn.it, Tel. +39-02-6448-2511
- Sergio Cacciatori, Università dell’Insubria, Como, Italy.
Sergio.Cacciatori@mi.infn.it, Tel. +39-031-238-6236