

Curriculum Vitae - Flavio Mercati

Postdoctoral researcher, Templeton Frontiers fellow & FQXi grant holder

Perimeter Institute for Theoretical Physics,
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Personal Data

Full name:	Flavio Mercati	Webpage:	www.perimeterinstitute.ca/personal/fmercati
Date of Birth:	March 5, 1984	E-mails:	fmercati@perimeterinstitute.ca flavio.mercati@gmail.com
Place of Birth:	Rome, Italy	Languages:	Italian (motherlanguage) English (fluent) Spanish (fluent) French (basic)
Nationality:	Italian		
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Grants

2013 FQXi Large Grant, amount: \$ 139 650
Project: *“Information, Complexity and the Arrow of Time in Shape Dynamics”*
Principal Investigators: T. Koslowski, F. Mercati; Co-Investigator: Julian Barbour.

Awards

2014 Editor’s suggestion article in Phys. Rev. Lett.
Title of the paper: “Identification of a gravitational arrow of time”
Co-authors: J. Barbour, T. Koslowski

2014 Fourth prize in the FQXi essay competition ‘How should humanity steer the future’
Title: *“U-turn or u die”*

2013 Editor’s choice article in Gen. Rel. Grav.
Title of the paper: *“Scale anomaly as the origin of Time”*
Co-authors: J. Barbour, Matteo Lostaglio

2012 Fourth prize in the FQXi essay competition ‘Questioning the foundations’
Title of the essay: *“Right about Time?”*
Co-author: S. Gryb

2010 Honorable mention for the essay competition of the Gravity Research Foundation
Title of the essay: *“Gravity in quantum spacetime”*
Co-authors: G. Amelino-Camelia, N. Loret and G. Mandanici

Teaching experience

Jan 2009 - Jun 2009 Teaching assistant for General Physics course
Biology Department - University of Rome “Sapienza”.

2004 - 2006 Tutoring for the Programming (C language) course
Department of Physics - University of Rome “Sapienza”

Invited Courses

- 2013** “An introduction to Shape Dynamics”, joint course with Julian Barbour
GRAVASCO IHP Trimester Summer school on Gravitation Astrophysics and Cosmology
 Institut Henri Poincaré, Paris, September 25th-26th, 2013

Theses supervised

- 2014** **Supervisor of Master thesis**, student: Andrea Napoletano, Marks: 110/110 *cum laude*
 Project title: “*Black Holes in Shape Dynamics*”
 Department of Physics - University of Rome “Sapienza”,
 Perimeter Institute for Theoretical Physics
- 2014** **Supervisor of Master thesis**, student: Mykola Murskyj,
 Project title: “*Homogeneous Cosmologies in Shape Dynamics*”
 Perimeter Institute for Theoretical Physics - Perimeter Scholars International Program
- 2014** **Supervisor of Master thesis**, student: Monica Rincon-Ramirez,
 Project title: “*Relativity Without Relativity*”
 Perimeter Institute for Theoretical Physics - Perimeter Scholars International Program
- 2013** **Supervisor of Summer research project**, student: Matt Beach,
 Project title: “*The relational quantum 3-body problem*”
 Department of Physics - University of Guelph,
 Department of Applied Math - University of Waterloo,
 Perimeter Institute for Theoretical Physics (ongoing)
- 2012** **Supervisor of Master thesis**, student: Matteo Lostaglio, Marks: 110/110 *cum laude*
 Thesis title: “*Quantum anomaly as the origin of time*”
 Department of Physics - University of Oxford and University of Pavia,
- 2008-10** **Co-supervisor of Master theses**, Principal supervisor: Giovanni Amelino-Camelia
 Students: Isabella Malacari (marks: 110/110),
 Giacomo Rosati (marks: 110/110 *cum laude*),
 Niccolò Loret (marks: 110/110 *cum laude*)
 Department of Physics - University of Rome “Sapienza”,

Conferences and seminars organization

1. Organizer of the parallel sessions “*Quantum Gravity phenomenology and noncommutative geometry*” and “*Shape Dynamics and conformal approaches to Quantum Gravity*” at the Loops 2013 conference, held at Perimeter Institute, 22/7/2013 – 26/7/2013.
2. Member of the organizing committee of the “*Quantum Gravity Workshop*” held at University of Rome Sapienza, Rome, Italy, 6/5/2010 – 7/5/2010.

Fellowships

- 2013 - present** **Foundational Questions Institute** (FQXi) Member
- 2012 - present** **Templeton Frontiers Fellow** at Perimeter Institute for Theoretical Physics
- 2011** 6-months travel grant from the University of Rome to visit U. of Nottingham
- 2007** 3-years PhD fellowship at Roma Tre University, Italy (declined)
- 2004 - 2007** Collaboration scholarship, Computer Programming Laboratory & Library at University of Rome “Sapienza”, Physics Department.

Education

- 2007 - 2010 Ph.D. (Physics)**, University of Rome “Sapienza”
Title of the thesis: *“On the theory and phenomenology of quantum spacetime”*
Thesis defended on date 18/02/2011
Supervisor: Giovanni Amelino-Camelia
- 2005 - 2007 Master Degree (Physics)**, University of Rome “Sapienza”
Grade: 110/110, *summa cum laude*
Title of the thesis:
“Noether analysis for field theory in κ -Minkowski noncommutative spacetime”
Thesis defended on date 28/09/2007
Supervisor: Giovanni Amelino-Camelia
- 2002 - 2005 Bachelor Degree (Physics)**, University of Rome “Sapienza”
Grade: 110/110, *summa cum laude*
Title of the thesis: *“Dimensioni extra e deviazioni dalla legge di Newton”*
Thesis defended on date 02/11/2005
Supervisor: Fabio Zwirner

Research appointments

- Oct 2012 - present** Perimeter Institute for Theoretical Physics, Canada
Postdoc & Templeton Frontiers Fellow
- Nov 2011 - June 2012** University of Nottingham, UK
Postdoc
- Oct 2010 - Oct 2011** University of Zaragoza, Spain
Postdoc

Other professional duties

Referee for Physics Letters B, Classical and Quantum Gravity, European Physical Journal C, General Relativity and Gravitation.

Invited seminars

- Sep 2014** **Plenary talk:** “*A Gravitational Arrow of Time*”
at “Conceptual and Technical challenges for Quantum Gravity” conference
University of Rome “Sapienza”
- Feb 2014** **Colloquium:** “*À la recherche du temps perdu*”
Perimeter Institute for Theoretical Physics,
Video of the talk: <http://pirsa.org/14020100/>
- Feb 2014** “*Shape Dynamics*”
LPSC Grenoble, France
- Jan 2014** “*Shape Dynamics: an overview*”
APC Paris, France
- Jan 2014** “*What is Shape Dynamics?*”
ENS Lyon, France
- Dec 2013** “*A Gravitational Arrow of Time*”
University of California at Davis, US
- Jan 2013** **Colloquium:** “*What is motion? What is time?*”
Perimeter Institute for Theoretical Physics
Video of the talk: <http://pirsa.org/13010003>
- Nov 2012** “*Quantum anomaly as the origin of time*”
Perimeter Institute for Theoretical Physics
- Feb 2012** “*Relativity without relativity*”
School of Mathematical Sciences, University of Nottingham, UK
- Nov 2011** “*Relative Locality, kappa-Poincaré and the Relativity Principle*”
Quantum Gravity Seminar of the Perimeter Institute for Theoretical Physics
Video of the talk: <http://pirsa.org/11110138>
- Mar 2011** “*kappa-Poincaré and the relativity of locality*”
School of Mathematical Sciences, University of Nottingham, UK
- May 2010** “*Probing the quantum gravity realm with cold particles*”
Department of Physics of UC Berkeley, California, US
- Nov 2009** “*Generalizing the Noether theorem for field theories over noncommutative spacetimes*”
Theoretical Physics seminar at Imperial College, London, UK
- Nov 2009** “*Noncommutative spacetimes and quantum gravity phenomenology*”
School of Mathematical Sciences, University of Nottingham, UK
- Oct 2009** “*Probing the quantum-gravity realm with cold atoms*”
ICRA seminar at University of Rome “Sapienza”

Conference talks

- May 2014** *“About Shape Dynamics”*
 “Quantum Gravity Days”
 Perimeter Institute for Theoretical Physics, Canada
- May 2014** *“Shape Dynamics: an introduction and a status report”*
 Opening lecture of the “Shape Dynamics Workshop”
 within the “Atlantic GR 2014” conference
 University of new Brunswick, Canada
- July 2013** *“The Arrow of Time, Complexity and Bulk Entropy in Gravity”*
 “Loops 13” conference, Waterloo, Canada
 Video of the talk: <http://pirsa.org/13070040/>
- May 2012** *“Shape Dynamics: Relativity without Relativity”*
 “The conformal nature of the Universe” workshop, Waterloo, Canada
 Video of the talk: <http://pirsa.org/12050067>
- May 2011** *“Shape Dynamics and the Gravity/CFT correspondence”*
 “Loops 2011” international conference, Madrid, Spain
- May 2010** *“IR/UV mixing and an anomaly with cold neutrons”*
 “Quantum Gravity Workshop”, University of Rome “Sapienza”, Italy
- Jul 2009** *“Sensitivity to Planck scale effects in cold atom experiments”*
 XII Marcel Grossmann Meeting, Paris, France
- Jul 2008** *“A no-pure-boost uncertainty principle from space-time noncommutativity”*
 Workshop “Noncommutative deformations of special relativity”
 ICMS, Edinburgh, UK

Participation to schools, workshops and conferences

- Sep 2014** “Modern Issues in Foundations of Physics” (Isham at 70), Imperial College, London
- Sep 2014** Plenary speaker at “Conceptual and Technical Challenges for Quantum Gravity”,
 University of Rome Sapienza
- July 2013** Organizer of “Loops 13” international conference, Perimeter Institute
- May 2012** Speaker at “The conformal nature of the Universe” workshop, Perimeter Institute
- May 2011** Speaker at “Loops 2011” international conference, CSIC, Madrid, Spain
- Sep 2010** “Mini-school on noncommutative geometry”, Banach center, Warsaw, Poland
- May 2010** Speaker at “Quantum Gravity Workshop”, University of Rome “Sapienza”, Italy
- Jul 2009** Speaker at “XII Marcel Grossmann Meeting”, Paris, France
- Jul 2008** Speaker at “Noncommutative deformations of special relativity” workshop,
 ICMS, Edinburgh, UK

References

- Giovanni Amelino-Camelia** Dipartimento di Fisica e INFN
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- Lee Smolin** Perimeter Institute for Theoretical Physics
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- Julian Barbour** University of Oxford
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- Neil Turok** Perimeter Institute for Theoretical Physics
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- Jose Luis Cortés** Departamento de Física Teórica
Universidad de Zaragoza
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Publication record, citations, impact

Published papers:

- Phys. Rev. Lett.: 3 papers
- Phys. Lett. B: 3 papers
- Phys. Rev. D: 5 papers
- Europhys. Lett.: 1 paper
- Eur. Phys. J.: 1 paper
- Class. Quant. Grav.: 3 papers
- Gen. Rel. Grav.: 1 paper
- Int J. Mod. Phys. A: 1 paper
- Int J. Mod. Phys. D: 3 papers
- Rev. Math. Phys.: 1 paper
- J. Neurol. Sci.: 1 paper

Total number of citations: 422 on [inSpire](#), 450 on [Scholar](#)

Topcites (50+): 3,

Known papers (10-49 citations): 12,

h-index: 12.