

## UNIVERSITÀ DEGLI STUDI DI MILANO

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## Curriculum Vitae - Flavio Mercati

*Marie Skłodowska-Curie Fellow, Istituto Nazionale di Alta Matematica*

Università di Roma La Sapienza,  
P.le Aldo Moro 2, 00185 Roma, Italia

### Dati Personali

<b>Cognome:</b>	Mercati	<b>Pagina web:</b>	<a href="http://www.roma1.infn.it/mercatisf/">http://www.roma1.infn.it/mercatisf/</a>
<b>Nome:</b>	Flavio	<b>E-mail:</b>	<a href="mailto:flavio.mercati@gmail.com">flavio.mercati@gmail.com</a>
<b>Data di nascita:</b>	5 Marzo 1984		<a href="mailto:mercatisf@roma1.infn.it">mercatisf@roma1.infn.it</a>
<b>Luogo:</b>	Roma	<b>Lingue:</b>	Italiano (madrelingua)
<b>Nazionalità:</b>	Italiana		Inglese (fluente)
			Spagnolo (fluente)
			Francese (elementare)

### Grant e finanziamenti

- 2017-18 FQXi Mini-Grant for conference organization**, ammontare finanziato: \$ 8 000.
- 2013-15 FQXi Large Grant**, ammontare finanziato: \$ 139 650  
Progetto: *"Information, Complexity and the Arrow of Time in Shape Dynamics"*  
Principal Investigators: T. Koslowski, F. Mercati; Co-Investigator: Julian Barbour;
- 2016-17 FQXi Mini-Grant**, ammontare finanziato: \$ 2 500.
- 2013-16 Templeton Frontiers grant** at Perimeter Institute, ammontare finanziato: \$ 60 000;
- 2015-16 FQXi Mini-Grant**, ammontare finanziato: \$ 2 000.
- 2011-12 Borsa di Perfezionamento** dell'Università di Roma La Sapienza, ammontare finanziato: € 7 740;

### Esperienza didattica

- Nov 2016** **Introduzione alla Gravità Quantistica**,  
parte del corso tenuto dal prof. Amelino-Camelia  
Dipartimento di Fisica - Università di Roma La Sapienza.
- Set 2013** **An introduction to Shape Dynamics**, corso su invito  
**IHP Trimester** summer school on Gravitation Astrophysics and Cosmology  
Institut Henri Poincaré, Paris.
- Gen 2009 - Giu 2009** Esercitatore per il corso di **Fisica Generale**  
Dipartimento di Biologia - Università di Roma La Sapienza.
- 2004 - 2006** Tutor per il corso di **Programmazione (linguaggio C)**  
Dipartimento di Fisica - Università di Roma La Sapienza.

## Premi e riconoscimenti

- 2016 Primo premio (\$ 10 000), Buchalter Cosmology Prize 2015**  
per l'articolo: *"Identification of a gravitational arrow of time"*  
*Commento della commissione giudicatrice: "an insightful step towards showing that an arrow of time is a natural expectation in cosmology, rather than a feature that requires significant fine-tuning as suggested by current theories."*
- 2014 Editor's suggestion** in Phys. Rev. Lett. e **Viewpoint** firmato da S. Carlip on 'Physics'  
Titolo dell'articolo: *"Identification of a gravitational arrow of time"*  
Co-authors: J. Barbour, T. Koslowski
- 2014 Quarto premio (\$ 1000)** per la FQXi essay competition 'How should humanity steer the future'  
Titolo del saggio: *"U-turn or u die"*
- 2013 Editor's choice** in Gen. Rel. Grav.  
Titolo dell'articolo: *"Scale anomaly as the origin of Time"*  
Coautori: J. Barbour, Matteo Lostaglio
- 2012 Quarto premio (\$ 1000)** per la FQXi essay competition 'Questioning the foundations'  
Titolo del saggio: *"Right about Time?"*  
Coautore: S. Gryb
- 2010 Honorable mention** per la gara di saggi della Gravity Research Foundation  
Titolo del saggio: *"Gravity in quantum spacetime"*  
Coautori: G. Amelino-Camelia, N. Loret and G. Mandanici

## Idoneità e Abilitazione Scientifica

- 2017 Abilitazione Scientifica Nazionale** a professore universitario di seconda fascia, settore 02/A2 (Fisica Teorica delle Interazioni Fondamentali)
- 2017 Idoneità** a Ricercatore a tempo indeterminato, Rudjer Boskovich Institute, Croazia
- 2016 Idoneità** a Ricercatore a tempo indeterminato di III fascia, Consiglio Nazionale delle Ricerche, Italia

## Borse e Fellowships

- 2016-2018 Marie Skłodowska-Curie Reintegration Fellowship**, Istituto Nazionale di Alta Matematica, Rome
- 2016-2018 Juan de la Cierva Incorporación fellowship**, Ministry of Research and Innovation, Spagna (rifiutato)
- 2013 - presente** Membro permanente del **Foundational Questions Institute** (FQXi)
- 2012 - presente** **Templeton Frontiers Fellow** al Perimeter Institute for Theoretical Physics
- 2011** Borsa di Perfezionamento dell'Università di Roma per visitare l'Università di Nottingham (durata: 6 mesi)
- 2007** Borsa di dottorato, Università di Roma Tre (rifiutata)
- 2004 - 2007** Borsa di collaborazione, Laboratorio di Calcolo & Libreria, Dipartimento di Fisica, Università di Roma La Sapienza.

## Supervisione studenti

- 2017 Relatore di tesi Magistrali**, studenti: Matteo Sergola (in corso),  
 Titolo della tesi: *"Noncommutative field theory and deformations of Poincaré symmetry"*  
 Marco Sciannamea, voto: 107/110;  
 Titolo della tesi: *"Spettri di operatori geometrici in spazitempi noncommutativi"*  
 Dipartimento di Fisica - Università di Roma La Sapienza,
- 2014 Relatore di tesi Magistrale**, studente: Andrea Napoletano, voto: 110/110 e lode  
 Titolo della tesi: *"Black Holes in Shape Dynamics"*  
 Dipartimento di Fisica - Università di Roma La Sapienza,  
 Perimeter Institute for Theoretical Physics
- 2014 Relatore di tesi di Master**, studentw: Mykola Murskyj,  
 Titolo tesi: *"Homogeneous Cosmologies in Shape Dynamics"*  
 Perimeter Institute for Theoretical Physics - Perimeter Scholars International Program
- 2014 Relatore di tesi di Master**, studente: Monica Rincon-Ramirez,  
 Titolo tesi: *"Relativity Without Relativity"*  
 Perimeter Institute for Theoretical Physics - Perimeter Scholars International Program
- 2013 Relatore di tesi Triennale**, student: Matt Beach,  
 Titolo tesi: *"The relational quantum 3-body problem"*  
 University of Guelph, University of Waterloo, Perimeter Institute;
- 2012 Relatore di tesi Magistrale**, studente: Matteo Lostaglio, voto: 110/110 cum laude  
 Thesis title: *"Quantum anomaly as the origin of time"*  
 Department of Physics - University of Oxford e Università di Pavia,
- 2008-10 Co-relatore di tesi Magistrali**, relatore interno: Giovanni Amelino-Camelia  
 Studenti: { Isabella Malacari (voto: 110/110),  
 Giacomo Rosati (voto: 110/110 e lode),  
 Niccolò Loret (voto: 110/110 e lode)  
 Dipartimento di Fisica - Università di Roma La Sapienza,

## Organizzazione conferenze internazionali

1. Organizzatore del workshop internazionale *"The role of the Observer in Quantum Gravity"*, Dipartimento di Fisica - Università di Roma La Sapienza, (da tenersi in Autunno 2017).
2. Organizzatore del workshop internazionale *"SD pow-wow"*, College Farm, Oxfordshire, 4–10/10/2015.
3. Organizzatore del workshop internazionale *"SD@Convergence: A Shape Dynamics workshop"*, Perimeter Institute, 25–26/7/2015.
4. Organizzatore delle sessioni *"Quantum Gravity phenomenology and noncommutative geometry"* e *"Shape Dynamics and conformal approaches to Quantum Gravity"* alla conferenza internazionale Loops 2013, Perimeter Institute, 22/7/2013 – 26/7/2013.
5. Organizzatore del workshop internazionale *"Quantum Gravity Workshop"*, Dipartimento di Fisica - Università di Roma La Sapienza, 6–7/5/2010.

## Formazione

- 2007 - 2010** **Dottorato in Fisica**, Dipartimento di Fisica, Università di Roma La Sapienza,  
Titolo della tesi: *"On the theory and phenomenology of quantum spacetime"*  
Tesi discussa in data 18/02/2011  
Relatore: Giovanni Amelino-Camelia
- 2005 - 2007** **Laurea Specialistica**, Università di Roma La Sapienz  
Voto: 110/110, *e lode*  
Titolo della tesi:  
*"Noether analysis for field theory in  $\kappa$ -Minkowski noncommutative spacetime"*  
Tesi discussa in data 28/09/2007  
Relatore: Giovanni Amelino-Camelia
- 2002 - 2005** **Laurea Triennale**, Università di Roma La Sapienz  
Voto: 110/110, *summa cum laude*  
Titolo della tesi: *"Dimensioni extra e deviazioni dalla legge di Newton"*  
Tesi discussa in data 02/11/2005  
Relatore: Fabio Zwirner

## Contratti di ricerca

- Set 2016 - Set 2018** Dipartimento di Fisica, Università di Roma La Sapienza,  
Marie Skłodowska-Curie Reintegration Fellowship
- Ott 2012 - Ago 2016** Perimeter Institute for Theoretical Physics, Canada  
Postdoc & Templeton Frontiers Fellow
- Nov 2011 - Giu 2012** Università di Nottingham, Regno Unito  
Postdoc
- Oct 2010 - Oct 2011** Università si Saragozza, Spagna  
Postdoc

## Altri doveri professionali

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

## Seminari in conferenze

Ho dato **40 seminari** in conferenze internazionali, workshop e group meetings. Di questi **19** in conferenze internazionali (di cui quattro seminari plenari su invito). Ho partecipato **due summer schools** e fatto da relatore in una.

## Indicatori Bibliometrici

### Articoli in rivista:

- Phys. Rev. Lett.: 3 papers
- Phys. Lett. B: 4 papers
- Phys. Rev. D: 7 papers
- Europhys. Lett.: 1 paper
- Eur. Phys. J.: 2 papers
- 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

**Numero totale di citazioni:** 985 su [Google Scholar](#)

**Topcites (50+):** 5,

**Articoli noti (10-49 citations):** 28,

**Indice h:** 19,

**Indice i-10:** 28.

## Alcuni miei seminari accessibili online

- Mar 2016** **Seminario Plenario:** *"SD: a status report and a new result on the big-bang singularity"*  
"Shapes of Gravity", Radboud University Nijmegen, Netherlands  
**Video del seminario:** [Youtube video](#)
- Ago 2015** **Seminario Plenario:** *"Shape Dynamics @ different scales"*  
"Gravity @ all scales"  
University of Nottingham, UK
- Lug 2015** **Seminario Plenario:** *"Entropy and the typicality of universes"*  
"Quantum Gravity Workshop"  
Università di Roma La Sapienza
- Gen 2015** **Colloquium:** *"Doing Physics with Shape Dynamics"*  
Perimeter Institute for Theoretical Physics,  
**Video del seminario:** <http://pirsa.org/15020115/>
- Set 2014** **Seminario Plenario:** *"A Gravitational Arrow of Time"*  
at "Conceptual and Technical challenges for Quantum Gravity" conference  
Perimeter Institute for Theoretical Physics
- Feb 2014** **Colloquium:** *"À la recherche du temps perdu"*  
Perimeter Institute for Theoretical Physics,  
**Video del seminario:** <http://pirsa.org/14020100/>
- Gen 2013** **Colloquium:** *"What is motion? What is time?"*  
Perimeter Institute for Theoretical Physics  
**Video del seminario:** <http://pirsa.org/13010003>
- Nov 2011** *"Relative Locality, kappa-Poincaré and the Relativity Principle"*  
Quantum Gravity Seminar of the Perimeter Institute for Theoretical Physics  
**Video del seminario:** <http://pirsa.org/11110138>
- Lug 2013** *"The Arrow of Time, Complexity and Bulk Entropy in Gravity"*  
"Loops 13" conference, Perimeter Institute, Waterloo, Canada  
**Video del seminario:** <http://pirsa.org/13070040/>

## Seminari su invito

- 16/12/2016 “Noncommutative differential geometry and field theory”  
University of Rome La Sapienza
- 16/12/2016 “Introduction to Shape Dynamics”  
University of Burgos, Spain
- 22/9/2016 “Noncommutative differential geometry and  $\kappa$ -deformed field theory”  
Rudjer Boskovich Institute, Zagreb, Croatia
- 1/6/2016 “*Noncommutative differential geometry and field theory*”  
Perimeter Institute for Theoretical Physics
- 3/3/2016 “Through the Big Bang”  
Physics department, Radboud University Nijmegen
- 25/2/2015 **Colloquium:** “*Doing Physics with Shape Dynamics*”  
Perimeter Institute for Theoretical Physics,  
**Video of the talk:** <http://pirsa.org/15020115/>
- 15/12/2014 “Shape Dynamics”  
IFT, Universidad Autonoma de Madrid, Spain
- 26/2/2014 **Colloquium:** “*À la recherche du temps perdu*”  
Perimeter Institute for Theoretical Physics,  
**Video of the talk:** <http://pirsa.org/14020100/>
- 4/2/2014 “Shape Dynamics”  
LPSC Grenoble, France
- 28/1/2014 “Shape Dynamics: an overview”  
APC Paris, France
- 21/1/2014 “What is Shape Dynamics?”  
ENS Lyon, France
- 6/12/2013 “A Gravitational Arrow of Time”  
University of California at Davis, US
- 23/1/2013 **Colloquium:** “*What is motion? What is time?*”  
Perimeter Institute for Theoretical Physics  
**Video of the talk:** <http://pirsa.org/13010003>
- 21/12/2012 “Quantum anomaly as the origin of time”  
Perimeter Institute for Theoretical Physics
- 28/02/2012 “Relativity without relativity”  
School of Mathematical Sciences, University of Nottingham, UK
- 21/11/2011 “*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>
- 23/3/2011 “*kappa-Poincaré and the relativity of locality*”  
School of Mathematical Sciences, University of Nottingham, UK
- 13/5/2010 “Probing the quantum gravity realm with cold particles”  
Department of Physics of UC Berkeley, California, US
- 19/11/2009 “Generalizing the Noether theorem for field theories over noncommutative spacetimes”  
Theoretical Physics seminar at Imperial College, London, UK
- 18/11/2009 “Noncommutative spacetimes and quantum gravity phenomenology”  
School of Mathematical Sciences, University of Nottingham, UK
- 29/10/2009 “Probing the quantum-gravity realm with cold atoms”  
ICRA seminar at University of Rome “Sapienza”

## Seminari in conferenza

- Lug 2016** “Shape Dynamics: describing gravity with conformal 3-geometry”  
Loops 17, Warsaw, Poland  
03/07/2016 - 07/07/2016
- Mag 2016** “Compact spherically symmetric solutions and gravitational collapse in SD”  
Shape Dynamics Workshop, Perimeter Institute  
15/05/2016 - 17/05/2016
- Lug 2016** “Noncommutative field theory and quantum deformations of centrally extended algebras”  
Problemi Moderni di Fisica Teorica, Vietri sul Mare, Italy
- Nov 2016** “Gravitational Collapse in SD: The Twin Shell Universe”  
at “Shape Dynamics Workshop”, UNAM, Mexico City  
21/11/2016 - 26/11/2016
- Lug 2016** “Covariant  $\kappa$ -deformed field theory in the language of differential forms”  
at “Noncommutative geometry, quantum symmetries and quantum gravity II”  
XXXVII Max Born Symposium, Wroclaw University, Poland  
4/7/2016 - 7/7/2016
- Mar 2016** **Plenary Lecture:** “*SD: a status report and a new result on the big-bang singularity*”  
at “Shapes of Gravity”, Radboud University Nijmegen, Netherlands  
**Video of the talk:** [Youtube video](#)  
30/3/2016 - 1/4/2016
- Ago 2015** **Plenary talk:** “*Shape Dynamics @ different scales*”  
at “Gravity @ all scales”  
University of Nottingham, UK  
24/8/2015 - 28/8/2015
- Lug 2015** **Plenary talk:** “*Entropy and the typicality of universes*”  
at “Quantum Gravity Workshop”  
University of Rome “Sapienza”, Italy  
20/7/2015 - 23/7/2015
- Apr 2015** “A gravitational arrow of time”  
“IberiCOS 2015” cosmology meeting,  
Aranjuez, Spain  
30/3/2015 - 1/4/2015
- Set 2014** **Plenary talk:** “*A Gravitational Arrow of Time*”  
at “Conceptual and Technical challenges for Quantum Gravity” conference  
Perimeter Institute for Theoretical Physics  
8/9/2014 - 12/9/2014
- Lug 2014** “*Gravitational collapse in Shape Dynamics*”  
at “XIV Marcel Grossmann meeting”  
University of Rome “Sapienza”, Italy  
12/7/2014 - 18/7/2014
- Giu 2014** “*Welcomes and introduction*”  
at ‘SD@Convergence’  
Perimeter Institute for Theoretical Physics  
25/6/2014 - 26/6/2014
- Mag 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  
2/5/2014 - 9/5/2014
- Lug 2013** “*The Arrow of Time, Complexity and Bulk Entropy in Gravity*”  
“Loops 13” conference, Waterloo, Canada  
**Video of the talk:** <http://pirsa.org/13070040/>  
22/7/2013 - 26/7/2013

- Mag 2012** *"Shape Dynamics: Relativity without Relativity"*  
"The conformal nature of the Universe" workshop, Perimeter Institute for Theoretical Physics  
**Video of the talk:** <http://pirsa.org/12050067>  
9/5/2012 - 12/5/2012
- Mag 2011** *"Shape Dynamics and the Gravity/CFT correspondence"*  
"Loops 2011" international conference, Madrid, Spain  
23/5/2011 - 28/5/2011
- Mag 2010** *"IR/UV mixing and an anomaly with cold neutrons"*  
"Quantum Gravity Workshop", University of Rome "Sapienza", Italy  
6/5/2010 - 7/5/2010
- Lug 2009** *"Sensitivity to Planck scale effects in cold atom experiments"*  
XII Marcel Grossmann Meeting, Paris, France  
12/07/2009 - 18/7/2009
- Lug 2008** *"A no-pure-boost uncertainty principle from space-time noncommutativity"*  
Workshop "Noncommutative deformations of special relativity"  
ICMS, Edinburgh, UK  
07/07/2008 - 11/07/2008

Roma, 17 Dicembre 2017

Flavio Mercati





## Books

1. *Shape Dynamics: Relativity and Relationalism* (accepted for publication by Oxford University Press)  
Flavio Mercati,  
arXiv:1409.0105

## Articoli in riviste *peer-reviewed*

### Geometria Noncommutativa

1. *Constraining the energy-momentum dispersion relation with Planck-scale sensitivity using cold atoms*,  
Giovanni Amelino-Camelia, Claus Lämmerzahl, Flavio Mercati, Guglielmo M. Tino,  
*Phys. Rev. Lett.* **103**, 171302 (2009)
2. *Taming nonlocality in theories with deformed Poincaré symmetry*,  
Giovanni Amelino-Camelia, Marco Matassa, Flavio Mercati, Giacomo Rosati,  
*Phys. Rev. Lett.* **106** 071301 (2011)
3. *OPERA-reassessing data on the energy dependence of the speed of neutrinos*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Niccoló Loret, Flavio Mercati, Giacomo Rosati, Paolo Lipari  
*Int. J. Mod. Phys.* **D20**, 2623–2640 (2011)
4. *Relative Locality in  $\kappa$ -Poincaré*  
Giulia Gubitosi, Flavio Mercati  
*Class. Quant. Grav.* **30**, 145002 (2013)
5. *Modifications to Lorentz invariant dispersion in relatively boosted frames*,  
Uri Jacob, Flavio Mercati, Giovanni Amelino-Camelia, Tsvi Piran,  
*Phys. Rev.* **D82**, 084021 (2010)
6. *Probing the quantum-gravity realm with slow atoms*,  
Flavio Mercati, Diego Mazon, Giovanni Amelino-Camelia, Jose Manuel Carmona, Jose Luis Cortes, Javier Indurain, Claus Lämmerzahl, Guglielmo M. Tino,  
*Class. Quant. Grav.* **27** 215003 (2010)
7. *UV and IR quantum-spacetime effects for the Chandrasekhar model*,  
Giovanni Amelino-Camelia, Niccolò Loret, Gianluca Mandanici, Flavio Mercati,  
*Int. J. Mod. Phys.* **D21**, 1250052 (2012)
8. *About Locality and the Relativity Principle Beyond Special Relativity*,  
Jose Manuel Carmona, Jose Luis Cortes, Diego Mazon, Flavio Mercati  
*Phys. Rev.* **D84**, 085010 (2011)
9. *Threshold anomalies in Horava-Lifshitz-type theories*,  
Giovanni Amelino-Camelia, Leonardo Gualtieri, Flavio Mercati,  
*Phys. Lett.* **B686**, 283–287 (2010)
10. *Weakness of accelerator bounds on electron superluminality without a preferred frame*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Niccoló Loret, Flavio Mercati, Giacomo Rosati  
*Europhys. Lett.* **99**, 21001 (2012)
11. *Relativistic kinematics beyond Special Relativity*,  
Jose Manuel Carmona, Jose Luis Cortes, Flavio Mercati,  
*Phys. Rev.* **D86** 084032 (2012)

12. *On the theory and phenomenology of spacetime symmetries at the Planck scale*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Flavio Mercati,  
*Int. J. Mod. Phys. A* **23**, 1157–1164 (2008)
13. *Quantum kappa-deformed differential geometry and field theory*  
Flavio Mercati  
*Int. J. Mod. Phys. D* **25**, 1650053
14. *Noether analysis of the twisted Hopf symmetries of canonical noncommutative spacetimes*,  
Giovanni Amelino-Camelia, Fabio Briscese, Giulia Gubitosi, Antonino Marciànò, Pierre Martinetti,  
Flavio Mercati,  
*Phys. Rev. D* **78**, 025005 (2008)
15. *A no-pure-boost uncertainty principle from spacetime noncommutativity*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Antonino Marciànò, Pierre Martinetti, Flavio Mercati,  
*Phys. Lett. B* **671**, 298–302 (2009)
16. *Minimal length in quantum space and integrations of the line element in Noncommutative Geometry*,  
Pierre Martinetti, Flavio Mercati, Luca Tomassini  
*Rev. Math. Phys.* **24**, 1250010 (2012)
17. *Discreteness of area in noncommutative space*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Flavio Mercati,  
*Phys. Lett. B* **676**, 180–183 (2009)
18. *Noncommutative Spaces and Poincaré Symmetry*,  
Stjepan Meljanac, Daniel Meljanac, Flavio Mercati, Danijel Pikutić  
*Phys. Lett. B* **766** 181 (2017)
19. *Vector-like deformations of Minkowski space and relativistic kinematics*,  
Niccolò Loret, Stjepan Meljanac, Flavio Mercati, Danijel Pikutić,  
*Int. J. Mod. Phys. D*, 1750123 (2017)

## Shape Dynamics

20. *Identification of a Gravitational Arrow of Time*  
Julian Barbour, Tim Koslowski, Flavio Mercati,  
*Phys. Rev. Lett.* **113**, 181101 (2014) (Editor's suggestion)
21. *Gravitational collapse of thin shells of dust in Shape Dynamics*,  
Henrique Gomes, Tim Koslowski, Flavio Mercati, Andrea Napoletano  
accepted by *Phys. Rev. D*, arXiv:1509.00833
22. *The gravity/CFT correspondence*,  
Henrique Gomes, Sean Gryb, Tim Koslowski, Flavio Mercati  
*Eur. Phys. J. C* **73**, 2275 (2013)
23. *A shape dynamical approach to holographic renormalization*  
Henrique Gomes, Sean Gryb, Tim Koslowski, Flavio Mercati and Lee Smolin  
*Eur. Phys. J. C* **75**, 3 (2015)
24. *The Solution to the Problem of Time in Shape Dynamics*,  
Julian Barbour, Tim Koslowski, Flavio Mercati  
*Class. Quant. Grav.* **31**, 155001 (2014)
25. *2+1 gravity on the conformal sphere*,  
Sean Gryb, Flavio Mercati  
*Phys. Rev. D* **87**, 064006(2013)

26. *Scale anomaly as the origin of time*,  
Julian Barbour, Matteo Lostaglio, Flavio Mercati  
*Gen. Rel. Grav.* **45**, 911–938 (2013) (Editor's choice)
27. *Self-gravitating fluid solutions of Shape Dynamics*,  
Daniel Guariento, Flavio Mercati,  
*Phys. Rev.* **D94**, 064023 (2016)
28. *On the fate of Birkhoff's theorem in Shape Dynamics*,  
Flavio Mercati,  
*Gen. Rel. Grav.* **48** 139 (2016)

### Saggi

29. *U-turn or u die*, Flavio Mercati.  
*Fourth-prize winning essay of the 2014 FQXi essay competition*  
'How should humanity steer the future'  
In *Frontiers Collection: How should humanity steer the future*, A. Aguirre, B. Foster, Z. Merali (Eds.), Springer (2016).
30. *Right about time?*, Sean Gryb, Flavio Mercati (arXiv:1301.1538)  
*Fourth-prize winning essay of the 2012 FQXi essay competition*  
'Questioning the foundations'  
In *Frontiers Collection: Questioning the Foundations of Physics*, A. Aguirre, B. Foster, Z. Merali (Eds.), Springer (2015).
31. *Gravity in quantum spacetime*, Giovanni Amelino-Camelia, Niccolò Loret, Gianluca Mandanici, Flavio Mercati,  
*Int J. Mod. Phys.* **D19**, 2385–2392 (2010)  
*Honorable Mention Gravity Research Foundation 2010*

### Altri Articoli peer-reviewed

32. *CSF markers in Alzheimer disease patients are not related to the different degree of cognitive impairment*,  
Alessandro Stefani, Alessandro Martorana, Sergio Bernardini, Marta Panella, Flavio Mercati, Antonio Orlacchio, Mariangela Pierantozzi,  
*J. Neurol. Sci.* **251**, 124-128 (2006)

### Proceedings di conferenze

1. *First results of the Noether theorem for Hopf-algebra spacetime symmetries*,  
Giovanni Amelino-Camelia, Fabio Brischese, Giulia Gubitosi, Antonino Marcianò, Pierre Martinetti, Flavio Mercati, Daniele Pranzetti,  
*Prog. Theor. Phys. Suppl.* **171**, 65–78 (2007)
2. *Quantum-Gravity Phenomenology of soft ultraviolet/infrared mixing*,  
Giovanni Amelino-Camelia, Niccolò Loret and Flavio Mercati,  
*AIP Conf. Proc.* **1318**, 3–13 (2010)
3.  *$\kappa$ -Minkowski differential calculi and star product*,  
Flavio Mercati, Andrzej Sitarz,  
*Proceedings of Science CNCFG2010* (2010) 030

4. *Sensitivity to Planck scale effects in cold atom experiments*,  
Flavio Mercati,  
[Proceedings of the MG12 Meeting on General Relativity, pp. 2429-2431 \(2012\)](#)
5. *Shape Dynamics and AdS/CFT*,  
Flavio Mercati,  
[J. Phys. Conf. Series \*\*360\*\*, 012062 \(2012\)](#)

## Preprints

1. *Classical Machian Resolution of the Spacetime Reconstruction Problem*,  
Edward Anderson, Flavio Mercati  
[arXiv:1311.6541](#)
2. *A Gravitational Origin of the Arrows of Time*  
Julian Barbour, Tim Koslowski, Flavio Mercati,  
[arXiv:1310.5167](#)
3. *On the distance observable in the Moyal plane and in a novel two-dimensional space with string-theory pregeometry*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Flavio Mercati,  
[arXiv: 0812.2675](#)
4. *String-inspired ultraviolet/infrared mixing and preliminary evidence of a violation of the de Broglie relation for nonrelativistic neutrons*,  
Giovanni Amelino-Camelia, Flavio Mercati,  
[arXiv:1004.3352](#)
5. *Conserved charges and quantum-group transformations in noncommutative field theories*,  
Giovanni Amelino-Camelia, Giulia Gubitosi, Flavio Mercati, Giacomo Rosati,  
[arXiv:1009.3264](#)
6. *Entropy and the Typicality of Universes*, [arXiv:1507.06498](#)  
Julian Barbour, Tim Koslowski, Flavio Mercati,
7. *Through the Big Bang*, [arXiv:1607.02460](#)  
Tim Koslowski, Flavio Mercati, David Sloan

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