

# MARCO SANCHIONI

## THEORETICAL PHYSICIST



### EDUCATION

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2008 - 2011  
University of  
Bologna

#### BACHELORS OF PHYSICS

Grade: 110 cum laude  
Bachelor Thesis: Superradiance effect in Kerr black holes  
Thesis Advisor: Roberto Casadio

2011 - 2013  
University of  
Trento

#### MASTER DEGREE IN PHYSICS

Grade: 110 cum laude  
Master Thesis: Trace anomaly in chiral conformal field theories  
Master advisor: Lorian Bonora  
Master co-advisor: Sergio Zerbini

2011 - 2013  
SISSA (Trieste)

#### DIPLOMA IN THEORETICAL PHYSICS

Diploma of advanced studies in theoretical particle physics and string theory

2013 - 2018  
Niels Bohr Institute  
University of  
Copenhagen

#### PHD IN THEORETICAL PHYSICS

Project: New horizons in particle and condensed matter physics from black holes  
PhD Thesis: Blackfolds and non-AdS holography  
PhD advisor: Niels Obers  
PhD co-advisor: Jacome Armas



### MAJOR PUBLICATIONS

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30 Dec 2015  
Journal of High  
Energy Physics

#### GRAVITATIONAL TENSION, SPACETIME PRESSURE AND BLACK HOLE VOLUME

Jay Armas, Niels A. Obers, Marco Sanchioni  
Published in JHEP 1609 (2016) 124  
DOI: 10.1007/JHEP09(2016)124

30 June 2016  
Journal of High  
Energy Physics

#### LIFSHITZ HYDRODYNAMICS FROM LIFSHITZ BLACK BRANES WITH LINEAR MOMENTUM

Jelle Hartong, Niels A. Obers, Marco Sanchioni  
Published in JHEP 1610 (2016) 120  
DOI: 10.1007/JHEP10(2016)120



## TALKS

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13 March 2016

Jacobs University  
of Bremen

10° NORDIC STRING MEETING

From Schroedinger to Lifshitz Hydrodynamics by particle  
number breaking



## TEACHING

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2014 - 2015

University  
of Copenhagen

GENERAL RELATIVITY

30 hours of exercises and seminars on Einstein theory of  
general relativity for students of the bachelor degree in  
physics

2015 - 2016

University  
of Copenhagen

GENERAL RELATIVITY

30 hours of exercises and seminars on Einstein theory of  
general relativity for students of the bachelor degree in  
physics

2015 - 2016

University  
of Copenhagen

SUPERSYMMETRIC FIELD THEORIES

30 hours of exercises and seminars on supersymmetry and  
supersymmetric field theories for students of the master  
degree in theoretical physics



## RESEARCH INTEREST

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### BLACK HOLES PHYSICS

Black holes are the most interesting objects of general relativity. I'm interested in  
understanding their microstate structures and their connection to quantum physics.



### HOLOGRAPHIC CORRESPONDENCE

It has been one of the greatest revolution in modern high energy physics, and it changed  
the destiny of string theory by giving us the possibility of applying string theory mathe-  
matics to ordinary physics (condensed matter, quantum information, ...). My interest  
in the correspondence is twofold:

- foundational aspects: is holography a fundamental feature of the nature?
- developing non relativistic holography



### PHILOSOPHY OF PHYSICS

I'm interested in exchanges between philosophy and physics in answering deep  
fundamental questions. In particular, the holographic principle can open up some  
relevant philosophical questions:

- ontology of a quantum space-time
- is gravity (and therefore space-time) emergent?



### SCIENCE AND FAITH DIALOGUE

I'm interested in an organic vision on the world where theology and natural sciences can  
contribute in a Trinitarian relationship (unity in diversity), developing a Trinitarian  
ontology. Scientific theories can help to reformulate theological doctrines. Philosophy, in  
particular philosophy of science, is the mediator between empirical sciences and theolo-  
gy.