

Prof. **Gaetano Lambiase**

Full Professor March 1, 2021

Università di Salerno

Dipartimento di Fisica E.R. Caianiello

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Teaching activity:

- 2018/2024: Theoretical Physics, General Relativity; Astrophysics (Degree in Physics)
- 2016/2018: Theoretical Physics; Electrodynamics and Gravitation; Theory of Fundamental Interactions (Master Degree in Physics)
- 2014/2016: Theoretical Physics; Electrodynamics and Gravitation (Master Degree in Physics)
- 2013/2014: Theoretical Physics (Master Degree in Physics)
- 2012/2013: Theoretical Physics; Cosmology and Astrophysics (Master Degree in Physics); Cosmology (PhD in Physics - XIII ciclo)
- 2011-2012 Cosmology and Astrophysics (Master Degree in Physics), Theoretical Physics (Degree in Physics); Cosmology (Ph.D in Physics);
- 2010-2011 Theoretical Physics (Master Degree in Physics); Cosmology (Ph.D in Physics);
- 2009-2010 Laboratory of Physics II (Degree in Mathematics) e General Physics (Degree in Engineering).
- 2008-2009 Laboratory of Physics II (Degree in Mathematics).
- 2007-2008 General Relativity (Degree in Physics) e Laboratory of Physics II (Degree in Mathematics).
- 2006/2007 Theoretical Physics (Degree in Physics), Pedagogato for General Physics I (Degree Fisica); Laboratory of Physics II (Degree in Mathematics).
- 2005-2006 Laboratory of Physics I (Degree in Mathematics) e General Physics I (Degree in Physics).
- 2003-2004 & 2004-2005 Laboratory of Physics I (Degree in Mathematics) e Pedagogato for Physics (Degree in Physics).

PhD Lectures held abroad:

- 2018: Tokyo University of Science:
Lecture 1: Introduction to General Relativity
Lecture 2: General Relativity: Applications
Lecture 3: Introduction to Cosmology
- 2016: Tokyo University of Science:
Lecture 1: Introduction to General Relativity and Cosmology
Lecture 2: The CMB physics: An introduction
- 2015: Tokyo University of Science:
Lecture 1: Introduction to Big Bang Cosmology
Lecture 2: Origin of matter-antimatter in the Universe

PhD Lectures held at Salerno University

- 2019/2020: Corso di QFT in curved spacetime at finite temperature
- 2011/2012: Corso di Cosmologia
- 2010/2011: Corso di Cosmologia

Academic activity:

- National Coordinator of IS INFN QGSKY (2016 - 2023) - <https://web.infn.it/CSN4/IS/Linea1/QGSKY/Team.html>
- Local coordinator of INFN - Gruppo Collegato di Salerno (2016 -)
- Member of "Giunta di Dipartimento" (2016 -)
- Member of the Committee for the final PhD examination in several Universities.
- Local Coordinator of FARB grant (2010-).
- Local Coordinator of PRIN grant (anno 2012 -).

- Member of the local team of the PRIN "Fundamental constituents of the Universe", national coordinator prof. Antonio Masiero (2006 & 2008)
- Member of the local team of the PRIN "Astroparticle Physics", national coordinator prof. G. Fogli (2005 - 2006 & 2003 - 2004) and of the PRIN "Theoretical Physics of the Fundamental Interactions", national coordinator prof. R. Petronzio (2000 - 2001 & 1998 - 1999) °Member of the International PhD in Physics in "Gravitational Physics and Astrophysics" at the University of Salerno, in collaboration with the Portsmouth University (GB) and Zuerich University (CH) (2009 -2012 & 2003 - 2006 & 2000 - 2003)
- Member of the PhD committee in Physics at the University of Salerno (2016-)

Visiting researcher:

- 26/04- 23/05/2018: Tokyo University of Science, Japan
- 9-22 December 2016: Tokyo University of Science, Japan
- 8-22 December 2015: Tokyo University of Science, Japan
- 24/4/1998 - 22/5/1998: Department of Physics, Regina University, Sask. (Canada).
- 08/05/1997 - 13/06/1997: Department of Physics, Regina University, Sask. (Canada).
- 11/04/1996 - 24/05/1996: Department of Physics, Regina University, Sask. (Canada)
- 1996-1998: Department of Physics, Regina University, Sask. (Canada)
- 13/06/1995 al 12/12/1995 presso il JINR, Dubna (Russia);
- 1995: Joint Institute of Nuclear Research, Dubna (Russia).
- 1993: Imperial College, London.

Organizer of Conference/Meeting:

- DArk Energy: from Fundamental Theories to Observations (and back), Frascati, Italy, 2023/09/11 -15
- International Conference on Statistical Physics, Chania-Crete (Greece) 10-14 July 2023
- SIGRAV School, Vietri sul Mare, Italy, 2019 -2023
- SIGRAV 04, Vietri sul Mare, Italy, September 19-22, 2004.
- Workshop: Local effects in gravitational physics: theoretical and experimental aspects, Edition 1: 15/12/2014; Edition. 2, 15/11/2015
- Current Problem on Theoretical Physics (2003 -2019)
- Majorana-Raychaudhuri Seminars (<https://sites.google.com/view/joint-seminars-Salerno-Lolkata/home?pli=1>)

Editor of the journal: International Journal of Geometric Methods in Modern Physics

Editor of the Proceedings:

- Quantum theory and spacetime, Special Issue, M. Blasone, S. Capozziello, G. Lambiase, P. Vitale (Eds.), International Journal of Geometric Methods in Modern Physics (2020).
- Fields and Particles integrability and nonlinearity, Proceedings Il Nuovo Cimento C5 38, Editors G. Marmo, G. Lambiase and P. Vitale, Vietri sul Mare (SA), Italy, March 28-29, 2015.

Referee of National and International projects

Authors of book/review:

- *The Interaction of Spin with Gravity in Particle Physics*, G. Lambiase & G. Papini, Springer Nature (2022)
- *Precision Gravity Tests and the Einstein Equivalence Principle*, G.M. Tino, L. Cacciapuoti, S. Capozziello, G. Lambiase, F. Sorrentino, Prog.Part.Nucl.Phys. 112 (2020) 103772 (invited review)
- *Testing theories of gravity and supergravity with interaction and observations of the cosmic microwave background*, G.K. Chakravarty, S. Mohanty, G. Lambiase, Int. J. Mod. Phys. D 26 (2017) 13, 1730023 (invited review)

- Neutrino coupling to cosmological background: A review on gravitational Baryo/Leptogenesis, G. Lambiase, S. Mohanty, A.R. Prasanna, Int.J. Mod.Phys.D 22 (2013) 1330030 (invited review)

Recent talks/presentations at Conferences:

- Gravitino Problem and modified Cosmology - 26th International Conference on Supersymmetry and Unification of Fundamental Interactions, Barcelona, July 23-27, 2018.
- Imperfect fluid effects on gravitino abundance - International Symposium on Cosmology and Particle Astrophysics (CosPA 2017) December 11-15, 2017, Yukawa Institute for Theoretical Physics, Kyoto University.
- GUP parameter from quantum corrections to the Newtonian potential (in coll. with F. Scardigli) - 90 Years of Quantum Mechanics, Singapore, January 23 – 26, 2017.
- Cosmological consequences of Non-commutative gauge theories (invited talk) - Tokyo University of Science, December 12, 2016.
- Moduli assisted two-field inflation from no-scale SUGRA - Trieste-SISSA, October 13, 2016.
- Two-field inflation in early Universe (invited talk) - XXII SIGRAV Conference, September 10-18, 2016.
- $f(R)$ cosmology and Dark Matter - The Dark Side of the Universe, The 11th International Workshop, Kyoto, 14-18 December 2015.
- Moyal-Weyl product and cosmology (invited talk), Tokyo University of Science, Japan, December 9, 2015

Recent participation at Conferences/Meetings:

- 26th International Conference on Supersymmetry and Unification of Fundamental Interactions, Barcelona, July 23-27, 2018.
- 90 Years of Quantum Mechanics, Singapore, January 23 – 26, 2017.
- International Symposium on Cosmology and Particle Astrophysics (CosPA 2017) December 11-15, 2017, Yukawa Institute for Theoretical Physics, Kyoto University, JAPAN
- XXII SIGRAV Conference, September 10-18, 2016.
- International Conference on General Relativity and Gravitation, New York City, July 10-15, 2016.
- The Dark Side of the Universe, The 11th International Workshop, Kyoto, December 14-18, 2015.

Highlights:

- Influent research according Stanford University ranking (2022): <https://www.unisa.it/unisa-rescue-page/dettaglio/id/529/module/326/row/21725/pubblicata-la-classifica-top-cited-scientists-2021-presenti-anche-78-ricercatori-unisa>
- Most Cited Nuclear Physics B Articles (the most cited articles published since 2017, extracted from Scopus) Ghost-free infinite derivative quantum eld theory, Volume 944, July 2019, L. Buoninfante, G. Lambiase, A. Mazumdar
- The theoretical models proposed in A.Iorio, G. Lambiase, Phys. Lett. B 716, 334 (2012) & A. Iorio, G. Lambiase, Phys. Rev.D 90, 025006 (2014) have been applied for the experimental setup to search the Hawking's effect on graphene (see Morrisi et al, Exploring event horizons and Hawking radiation through deformed graphene membranes, 2D Mater. 7, 041006 (2020). The news appeared on the magazine La REPUBBLICA, 14 Luglio 2020, Un buco nero tascabile fatto col grafene per studiare l'orizzonte degli eventi.

Member of the following International Collaborations:

- Einstein Telescope (ET) Collaboration - GW to probe fundamental Physics
- Cosmic Explorer: search for gravitational-wave sources across the universe
- LISA: Laser Interferometer Space Antenna
- COST Coll: QUANTUM GRAVITY PHENOMENOLOGY IN THE MULTI-MESSENGER APPROACH
- THESEUS: a new window on the early Universe and the multi-messenger
- GINGER (Gyroscopes IN GEneral Relativity): measurements of General Relativity components of the gravitational field of the Earth

Research activity:

- Extended theories of gravity
- Quantum gravity (phenomenology and theory)
- QFT (local e non-local theories), QFT in curved spacetime
- Astroparticle
- Cosmology (early Universe, baryogenesis, Dark Energy)
- Astrophysics (Gravitational Waves, compact objects, GRBs)
- Physics beyond the standard model (neutrino physics, axion, dark matter, Lorentz invariance violation)
- Entanglement in QFT and in curved spacetime

Publications (from arXiv):

- # 275
- h index: 39
- Citations: 5828