europass Curriculum vitae

PERSONAL INFORMATION

Stefano Ansoldi (PhD; researcher, full-time, permanent)

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WORK EXPERIENCE (POSITIONS)

2020 – Present Project coordinator

Horizon 2020, Marie Curie (outgoing fellowship) project: *QUABODYP*

2008 – Present Researcher, permanent, full-time

University of Udine, Italy

- Research in physics, both, theoretical and applied; main fields: relativity and gravitational physics, cosmology, high energy astrophysics, numerical relativity
- Active member of the MAGIC collaboration, and secretary of the time allocation committee
- Member of the VIRGO collaboration
- Member of the advisory panel of Classical and Quantum gravity
- Member of the Italian evaluation panel of the Fulbright Commission
- Member of the Italian National Institute of Nuclear Physics (INFN)
- Member of the mathematical physics section (GNFM) of the Istituto Nazionale di Alta Matematica “Francesco Severi” (INdAM)
- Member of the Japan Physical Society (JPS)
- Member of the Editorial Board of Quanta

2007 – 2008 Fellow of the Japan Society for the Promotion of Science (JSPS)

Topics of research: quantum cosmology and gravitational physics

2006 – 2007 Lecturer and research associate

Department of Mathematics and Computer Science, Udine University and Department of Physics, Trieste University, Italy

2005 – 2006 Fulbright fellow

Center for Theoretical Physics, Massachusetts Institute of Technology (MIT), USA

Topics of research: quantum cosmology

2004 – 2005 Lecturer and research associate

Department of Mathematics and Computer Science, Udine University and Department of Physics, Trieste University, Italy

2003 – 2004 Postdoctoral fellow

Department of Mathematics and Computer Science, Udine University, Italy

Topics of research: 3D reconstruction from stereo image recognition

1999 – 2003 Postdoctoral fellow (assegnista di ricerca)

Department of Theoretical Physics, Trieste University, Italy

Topics of research: dynamics of extended objects, gravitation, quantum field theory

WORK EXPERIENCE (TECHNICAL DUTIES)

2021- Management of numerical relativity simulations with the Einstein toolkit on the Marconi supercomputer cluster at CINECA

2018- Development and management of Magic Proposals Submission System (MPSS) and Magic Time Allocation Committee Evaluation System (MTACES), web tools for the submission (and evaluation) of scientific proposal to the MAGIC collaboration (time allocation committee)

2017- Development (in progress) of The Automated Transient Advocate (TATA), an automated VO-Events listener, selecting very high energy potential targets of observations for electromagnetic follow-ups of gravitational wave alerts

2013- Development and maintenance of Magic Automated Analysing And Alerting Unit (MA^4U), an automated analysis tool downloading daily Fermi data, and performing a preliminary analysis to identify and select targets of observation for the MAGIC telescope

2013- System manager of the computational resources of MAGIC Udine group (server and storage arrays)

2015-2016 Webmaster of the MAGIC collaboration

WORK EXPERIENCE (ADDITIONAL)

Outreach activity Speaker in a few invited talks at schools (also internationally) and a couple of public events about the physics of black holes, general relativity and cosmology; interviewed in a local tv program about the mathematics of fractals, and in a national radio program and online magazine about time and time travel. Selected outreach:

- 2021/03/08 Caterpillar estate
- 2021/02/16 OggiScienza (in Italian)
- 2019/06/23 Caffè dei Quanti (in Italian)
- 2019/05/31 Botteghe del Sapere (in Italian)

Given seminars/talks Speaker in more than 50 talks, given, both, at international conferences/meetings/workshops and following invitations in selected institutes worldwide

Visiting scientist Several short term visits (about 30, between one week and two months) in institutes worldwide (Kyoto University, Max Planck Institute for Gravitational Physics (Albert Einstein Institute, Berlin), Ben Gurion University, University of Victoria (Canada), Osaka-city University, University of British Columbia, Colorado University, Canadian Institute for Theoretical Astrophysics (Toronto))

WORK EXPERIENCE (TEACHING)

2022/2023 general relativity (master)
2021/2022 advanced general relativity (master)
2020/2021
2019/2020
2018/2019

2017/2018 general relativity (master)
advanced general relativity (master)
general relativity (school of excellence)

2016/2017 general relativity (master)
advanced general relativity (master)
theoretical physics (school of excellence)

2015/2016	general relativity (master)
2014/2015	advanced general relativity (master)
2013/2014	
2012/2013	general relativity (PhD) general relativity (master) advanced general relativity (master) theoretical physics (school of excellence)
2011/2012	general relativity (master) advanced general relativity (master)
2010/2011	advanced general relativity (master)
2009/2010	general relativity (master) statistical mechanics (master) advanced analytical mechanics (undergraduate)
2008/2009	analytical mechanics (undergraduate)
2007/2008	analytical mechanics (undergraduate)
2006/2007	mathematical physics (master)
2005/2006	analytical mechanics (undergraduate)
2002/2003	geometry of spacetime (master) mathematical methods for physicists (undergraduate, teaching assistant)
2001/2002	mathematical methods for physicists (undergraduate, teaching assistant)

WORK EXPERIENCE (SUPERVISING STUDENTS)

2023

Domenico Giuseppe Salluce, master in physics, *Unruh effect and symmetry restoration*
Guido Da Re, master in physics, in collaboration with Christian Cherubini, *Analysis of fermions propagation on Kerr solution with Wald electromagnetic field*
Celse Boco, master in physics, in collaboration with Antonio Pittelli, *Topological and Thermodynamics Aspects of Black Holes in Anti-de Sitter Spacetime*
Fabrizio Rippa, master in physics, in collaboration with Antonio Pittelli, *Quantum field theories with vector global symmetries*
Mauro D'Achille, master in physics, co-supervisor, in collaboration with Daniele Pranzetti, *Shear Operator by means of Loop Quantum Gravity techniques*
Lorenzo Di Giacomo, master in physics, *in progress: quasi-normal modes*
Pierfrancesco Menia, master in physics, *in progress: numerical relativity*
Marco Calò, master in physics, *in progress*
Lorenzo Ciaramella, undergraduate in physics, *An introduction to compact astro[hysical objects and Love numbers]* (in Italian: "Oggetti astrofisici compatti e numeri di Love: introduzione")
Leonardo Barazza, undergraduate in physics, *in progress: numerical relativity*
Giulia Tazzoli, undergraduate in physics, *in progress: Hawking radiation*

2022 Benjamin Hernandez, master in physics, *Covariant magnetohydrodynamics: fundamental aspects and the extension beyond the ideal approximation*
Aaron Collavini, master in physics, in collaboration with Sebastiano Sonego, *Emergent gravity: a paradigm*
Edoardo Vergallo Gazzina, master in physics, *Ostrogradsky instability: implications for modified gravity theories*
Daniele Iannotti, master in physics, in collaboration with Antonio Pittelli, *Jackiw-Teitelboim Gravity and AdS/CFT Holography*
Gianfranco De Simone, master in physics, *Edge States and Holography: Black Holes as Incompressible Quantum Droplets*
Lorenzo Tamburino Ventimiglia di Monteforte, master in physics, co-supervisor, in collaboration with Takeshi Kobayashi, *Schwinger pair production in the Early Universe*
Dennis Verra, master in physics, co-supervisor, in collaboration with Albino Perego, *Properties of accretion discs in binary neutron stars mergers*
Elisa Angeloni, undergraduate in physics, *On the Newman-Janis algorithm*
Carlotta Casi, undergraduate in physics, *Principal fiber bundles and gauge theories* (in Italian, "Fibrati principali e teorie di gauge")
Luca Ipsale, undergraduate in physics, *Higher Dimensional Theories of Gravity*
Andrea Cavallaro, undergraduate in physics, *Basics of Quantum Field Theory in Curved Spacetime and Hawking Radiation*
Tommaso Piccolo, undergraduate in physics, *Massive theories: from Proca theory to gravity* (in Italian, "Teorie massive: dall'equazione di Proca alla gravità")
Matteo La Torre, undergraduate in physics, *Basic Ideas In Canonical Gravity*
Eleonora Lamma, undergraduate in physics, co-supervisor, in collaboration with Fabio Benatti, *Quantum correlations in the Unruh effect* (in Italian, "Correlazioni Quantistiche nell'Effetto Unruh")

2021 Marco Cusinato, master in physics, co-advisor, in collaboration with Albino Perego, *Quantitative Characterization of Neutrino Luminosity in Numerical Simulations of Binary Neutron Star Mergers*
Cristian Gusella, master in physics, *Eddington-inspired-Born-Infeld (EiBI) Gravity*
Francesco Pisani, master in physics, co-advisor, in collaboration with Daniele Oriti, *Holonomy Operators in the Group Field Theory approach to Quantum Gravity*
Alessandro Armando Vigliano, master in physics, in collaboration with Francesco Longo, *Gamma Ray Burst Polarization Studies with AMEGO*
Alessandro Longo, master in physics, co-advisor, in collaboration with Miguel Zumalacarregui and Giovanni Tambalo, *Backreaction Mechanism in Cubic Galileon Cosmology*
Luca Belpietro, master in physics, *Implications on the PBH scenario from the second LIGO–Virgo Gravitational–Wave Transient Catalog*
Jacopo Salvalaggio, master in physics, co-advisor (in collaboration with Giovanni Cabass), *Robustness of mixed scalar-tensor correlators in the EFT of inflation*
Daniele Berti, undergraduate in physics, *Field Equations of $f(R)$ Theories of Gravity* (in Italian, "Le equazioni di campo delle teorie $f(R)$ della gravità")
Lucio De Simone Berti, master in physics, *Fundamental ideas and modern developments in perturbative quantum gravity*

2020 Raffaele D'Amelio, master in physics, in collaboration with Marcus Werner, *On the lensing and photon rings of the Schwarzschild and Kerr black holes: a new numerical approach and analytical results*
Anna Zulianello, master in physics, co-advisor, in collaboration with Stefano Liberati and Raul Carballo Rubio, *Astrophysical aspects of rotating ultracompact objects*
Alessia Cardinali, master in physics, in collaboration with Antonio Pittelli, *Traversable wormholes beyond Einstein-Maxwell theory*
Crosato Menagazzi Ludovica, master in physics, co-advisor, in collaboration with Lara Nava and Davide Miceli, *Multi-messenger emission from Long Gamma-Ray Bursts: generalization of the neutrino transport equation and modelling of the afterglow emission*
Marco Matteini, master in physics, in collaboration with Lorenzo Di Pietro, *Positivity Constraints from Causality*
Pietro Smaniotto, master in physics, *Quasi Normal Modes: Theory, Applications and the WKB approach in Black Hole spacetimes*
Emma Dreas, undergraduate in physics, *Gravitational collapse in general relativity: from compact objects to black holes*
Alessandro Pulimeno, undergraduate in physics, *Black Holes in higher dimensions* (in Italian, "Buchi Neri: Soluzioni Multidimensionali")
Guido Da Re, undergraduate in physics, *Markov limiting density hypothesis: theory and recent ideas* (in Italian, "L'ipotesi di densità limite di Markov: analisi e sviluppi della ricerca")
Monica Conte, undergraduate in physics, *Analogies and differences between continuous and discrete models of complex systems* (in Italian, "Analogie e differenze tra modelli continui e discreti di sistemi complessi")
Marzio Pecar, undergraduate in physics, *Kerr-Newman thin-shell wormholes and negative surface energy density* (in Italian, "Densità superficiale di energia negativa richiesta in cunicoli spaziotemporali di Kerr-Newman a giunzione sottile")
Giosuè Gambardella, undergraduate in physics, *Photons propagation around black holes* (in Italian, "Propagazione dei fotoni attorno ad un buco nero")
Michele Tonnini, undergraduate in physics, co-advisor, in collaboration with Francesco Longo, *A study of the Lorentz factor as a function of Gamma Ray Bursts relativistic motion* (in Italian, "Evoluzione del fattore di Lorentz in funzione del moto relativistico della sorgente dei Gamma Ray Bursts")
Burelli Irene, undergraduate in physics, referee

2019 Giuseppe Diana, master in physics, *Quantum processes in inflationary cosmology: dynamics of quantum fields, nucleation and tunnelling of vacuum bubbles*
Maria Berti, master in physics, in collaboration with Francesca Lepori and Matteo Viel, *Cosmic acceleration: from effective field theory to constraints on model parameters*
Alberto Monte, master in physics, in collaboration with Antonio Pittelli, *AdS/CFT correspondence and holographic entanglement entropy*
Marco Carmelo Ventura, master in physics, *Properties of the $f(R)$ Gravitational Potential Generated by Ultralight Axions*
Marco Pasini, master in physics, in collaboration with Antonino Flachi, *Unruh effect: quantization in non-inertial reference frames*
Daniele Ceppi, undergraduate in physics, *Black hole uniqueness theorems* (in Italian: "Buchi neri e teoremi di unicità")
Francesco Cesa, undergraduate in physics, *Geometric formulation of electrodynamics in relativity*
Fabiano Feleppa, undergraduate in physics, *On Sagnac effect, and its curved spacetime generalization* (in Italian: "Sull'Effetto Sagnac e la sua Generalizzazione in Spaziotempo Curvo")
Silvia Gasparotto, undergraduate in physics, *Black Hole Thermodynamics and Entanglement Entropy*
Benjamin Hernandez, undergraduate in physics, *Causal Structure and Singularity Theorems in General Relativity*
Biancamaria Sersante, undergraduate in physics, *Black Hole radiation: Hawking original proposal*
Marco Sicklinger, undergraduate in physics, *Spacetimes with horizons but without singularities: from the Bardeen solution to more recent realizations* (in Italian: "Strutture dello spazio tempo con orizzonti ma senza singolarità: dalla soluzione di bardeen
a realizzazioni più recenti")
Nicolò Venuti, undergraduate in physics, *Introduction to the PPN formalism for gravitational theories*
Antonello D'Oronzo, undergraduate in physics, *Wormholes in General Relativity: mathematical and physical foundations* (in Italian: "Basi Matematiche e Fisiche del concetto di Wormhole in Relatività Generale")
Giacomo Zelbi, undergraduate in physics, in collaboration with Gabriele Cescutti, *Binary coalescence and galaxy chemical evolution* (in Italian, "Coalescenze di sistemi binari ed evoluzione chimica della galassia")
Veronica Pasquarella, master in physics, referee

2018 Francesco Giacomello, master in physics (in collaboration with Antonio de Felice), *Analysis of the Galileon Tracker solution's parameter space through ISW-galaxy cross correlation*
Filippo Sottocorona, master in physics, *Selected aspects in the theory of quantum fields on curved backgrounds with applications*
Nico Samà, master in physics (in collaboration with Yuki Sakakihara), *Massive gravity and bigravity*
Francesco Pisani, undergraduate in physics, *Schwarzschild geometry and black holes*
Alessandro Longo, undergraduate in physics, *Geometrical and physical properites of spacetime singularities*
Davide De Biasio, undergraduate in physics, *Goedel's solution to Einstein field equations*
Pietro Smaniotto, undergraduate in physics, *Basic ideas behind the concept of black hole entropy*
Vito Dichio, undergraduate in physics, *Dynamics on differentiable manifolds*
Gabriele Degano, undergraduate in physics, *Geometry and physics of the Lense-Thirring effect*
Giovanni Fasiolo, undergraduate in physics, *Non inertial observers and the concept of quantum vacuum*
Marco Matteini, undergraduate in physics, *Basics of vacuum decay in presence of gravity*
Paolo Arnaudo, school of excellence short dissertation, *Basic ideas in cosmology*
Diego Perissutti, school of excellence short dissertation, *Relativistic magnetohydrodynamics*
Claudio Verardo, school of excellence short dissertation, *Relativistic electrodynamics*

2017 Fabio Decolle, master in physics, *Recent developments in gauge approaches to conformal gravity*
Marco Gambone, school of excellence short dissertation, *Relativistic generalizations of Schrödinger equation*
Paolo Arnaudo, school of excellence short dissertation, *Lie groups and applications to physics*
Claudio Verardo, school of excellence short dissertation, *Introduction to quantum mechanics (non-relativistic theory)*
Francesco Maria Fabbri, master in physics (as co-advisor, in collaboration with Bruno Giacomazzo), *General Relativistic simulation of binary neutron stars merger: an engine for Short Gamma Ray Burst*

2016 Rachele Desiante, PhD in physics (in collaboration with Francesco Longo), *Gamma-Ray Transients observed with the Fermi Large Area Telescope*
Simone Peirone, master in physics (in collaboration with Alessandra Silvestri and Matteo Viel), *Effective Field Theory and Galaxy Clusters as Cosmological Tests of Modified Gravity*
Luca Bertossa, undergraduate in physics, *The Mathematics and Physics of Gravitational Waves*
Alice Boldrin, undergraduate in physics, *Chasing time: selected ideas about time in physics*
Mardero Fabio, undergraduate in physics, *Differences between low- and high-speed magnetohydrodynamics*
Nicolò Cangiotti, master in mathematics (as co-advisor in collaboration with Vittorino Talamini and Sebastiano Sonego), *A Discrete Approach to Quantum Gravity*

2015 Gianmarco Maggio, master in physics (in collaboration with Andrea Gruppuso), *Constraints on models that violate parity symmetry through the effect of cosmological birefringence*
Enrico Russo, master in physics (in collaboration with Sebastiano Sonego), *A gauge approach to gravity*
Francesco Battistel, undergraduate in physics, *Black hole entropy and thermodynamics*
Elisa Tessarotto, undergraduate in physics, *Instantons: theory and applications*
Francesco Cianci, undergraduate in physics, *Nordström theory of gravity*
Giorgio Scattolini, master in mathematics (as co-advisor in collaboration with Alessandro Tanzini), *Selected topics about Quantum Field Theory in curved spacetime and Hawking radiation*

2014 Francesca Lepori, master in physics (in collaboration with Luciano Rezzolla), *Critical behaviour in the head-on collision of rotating relativistic stars*
Alex Zucca, master in physics (in collaboration with Alessandra Silvestri and Matteo Viel), *Cosmological implications of modified gravity in a massive neutrinos universe*
Michele Peresano, master in physics, *Basics of relativistic models of energy extraction in black hole spacetimes*
Giovanni Cabass, master in physics (as co-advisor in collaboration with Paolo Creminelli), *Basics of relativistic models of energy extraction in black hole spacetimes*
Vedran Skrinjar, master in physics (as co-advisor in collaboration with Daniele Oriti and Lorenzo Sindoni), *Definition of holonomy operators in Group Field Theories*
Anna Barbieri, master in mathematics (as co-advisor in collaboration with Marina Cobal), *Study of Higgs boson production associated with a top/anti-top pair at ATLAS LHC experiment*

2013 Giulio Simonetti, undergraduate in mathematics, *Basics of differential calculus on post-critical finite fractals*
Petra Segina, undergraduate in physics, *A critical review of the equivalence principle*
Giulio Simonetti, school of excellence short dissertation, *Extension of the Laplacian operator to the Sierpinsky gasket*
Luca Fenzi, school of excellence short dissertation, *Non-standard analysis: an introduction*

2012 Antonio Pittelli, master in physics (in collaboration with Lorenzo Sindoni), *Coherent States for Quantum Gravity and Applications*
Domenico Ferigo, master in computational physics, *Gravitational collapse: theoretical framework and numerical simulations*
Nicolò Cangiotti, undergraduate in mathematics, *Mathematical aspects of the special theory of relativity*
Oscar de Felice, undergraduate in physics, *Classical gauge theories: foundations and applications*
Luca Cimbaro, undergraduate in physics, *Basics of magnetohydrodynamics in astrophysical environments*
Vedran Skrinjar, undergraduate in physics, *Foundations of parametrized gravity theories*

2011 Andrea Gasparin, undergraduate in mathematics, *Sufficient conditions for variational problems*

2010 Tiziano Puppi, master in computational physics (in collaboration with A. Zanette), *Monte Carlo methods for option pricing in jump models*

Guglielmo Feltrin, undergraduate in mathematics, *Mathematical foundations of electromagnetic interactions*

2008 Eleonora Annigoni, undergraduate in mathematics, *Modified theories of gravity*

2004 Lorenzo Sindoni, master in physics, *Extended objects dynamics in general relativity: geometrical foundations and applications*

Daniele Coslovich, master in physics, short dissertation

Internships Since 2014, supervisor of more than 50 internships at the undergraduate and master level on theoretical/mathematical physics, applications of differential geometry to physics, special/general relativity and gravitational physics

EDUCATION AND TRAINING

1999 **PhD – physics (theoretical physics)** ISCED 8

Thesis Title: "Boundary versus Bulk Dynamics of Extended Objects and the Fractal Structure of Quantum Spacetime"

Trieste University, Italy

1995 **Specialization course for teachers in scientific subjects**

Udine University, Italy

1994 **Bachelor of Science – *summa cum laude*, physics** ISCED 7

Thesis Title: "Quantum-gravitational nucleation of spacetime domains"

Trieste University, Italy

PERSONAL SKILLS

Mother tongue: Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages

Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Digital competences - Self-assessment grid

Computer skills

- competent with most operating systems, not only as a user, but also as a system administrator;
- proficient in coding in most languages (C, C++, Fortran), including scripting languages (in particular, PERL, PHP, Python);
- competent in advanced web developing, including database management (mysql)
- competent with most Microsoft Office programs.

ADDITIONAL INFORMATION

Publications: Publications on iNSPIREhep