

Education and Qualifications

2015	Degree Physics	University of Valencia (UV)
2016	Master Advanced Physics	University of Valencia (UV)
2019	Master Philosophy of Science	National Distance University (UNED)
2021	Ph.D Physics	University of Valencia (UV)

Research Experience

2023-Present	Postdoctoral Researcher, University of Utrecht (Netherlands). Postdoctoral Research contract with the University of Utrecht (Netherlands) in the ERC COSMO-MASTER project of Dr. Niels Martens.
2022-2023	Postdoctoral Fellow, Radboud University Nijmegen (Netherlands). <i>Host: Dr. Frank Saureiss; Project: Quantum fields and Gravity.</i> Postdoctoral Research contract for one year in the High Energy Physics Department & IMMAP
2021-2022	Postdoctoral Fellow, School of Mathematics & CfAR, Dublin City University (Ireland). <i>Host: Dr. Peter Taylor; Project: Quantum effects in the evolution of the Universe.</i> Postdoctoral Research contract with Dublin City University (Ireland).
2017-2021	Postgraduate Researcher, Instituto de Física Corpuscular & CSIC (Spain). <i>Supervisor: Prof. Jose Navarro-Salas; Project: Renormalization in curved spacetime</i>

Competitive Grants

2024	Julian Schwinger Foundation grant (10.000\$) Competitive funding for supporting PhD students to attend the third workshop QFTCSW III.
2023	CA21136 Cost Action Short-Term Scientific Mission (1.844€) Competitive funding for a research visit at University of Granada
2022	Margarita Salas Fellowship, funded by the Ministry of Science of Spain (80.300€). Competitive funding for a two year research contract with the University of Valencia.
2022	CA18108 Cost Action Short-Term Scientific Mission (2.860€) Competitive funding for a research visit at University of Pavia.
2021	Government of Ireland Postdoctoral Fellowship, funded by the Irish Research Council (96.417€) Highly Competitive funding (less than 10% success rate) for a research project in any Irish university.
2017	Severo Ochoa Ph.D. fellowship (92.750€), funded by the Ministry of Economy of Spain. Competitive funding for the development of a Ph.D. thesis project in a highly excellent research institute.
2016	University of Valencia Travel Grants (317.74€).
2023	Juan de la Cierva fellowship (67.400€), funded by the Ministry of Economy of Spain. (Declined)
2023	CIAPOS Postdoctoral Fellowship (92.470€), funded by the Government of Valencia (Declined)

Talks (T), Invited Talk (IT), Posters (P) and Seminars

- 2024 *2nd History & Philosophy of Cosmology Conference*, (T) (Italy)
- 2024 *14th Biennial Conference on Classical and Quantum Relativistic Dynamics of Particles and fields*, (IT) (Finland)
- 2024 *Iberian Cosmology meeting IBERICOS*, (T) (Spain)
- 2023 *Spanish and Portuguese Relativity Meeting* (T) (Spain)
- 2022 *Avenues in Quantum Field Theory in Curved Spacetime* (T) (Italy)
Selected for a preceeding in IOP's Journal of Physics: Conference Series.
- 2022 *IAP 2022 conference: When \hbar meets G*, (P) (France)
- 2022 *Irish Theoretical Physics Conference 2022*, (T) (Ireland)
- 2021 *Sixteenth Marcel Grossmann Meeting*, (T) (Online)
- 2019 *22nd International Conference General Relativity and Gravitation*, (T) (Spain)
- 2018 *Fifteenth Marcel Grossmann Meeting*, (T) (Italy)
- 2017 *VII Essential Cosmology for the Next Generation*(T) (Mexico)
- 2017 *VI Postgraduate Meeting*, (T) (Spain)
- 2017 *Iberian Cosmology meeting IBERICOS*, (T) (Spain)
Seminars: University College Dublin, University of Pavia, University of Sheffield, Radboud University, University Complutense Madrid, and University of Basel.

Organization of Conferences

- VI Postgraduate Meeting, 2017, Valencia (Spain)
- I QFTCS Workshop, 2022, Online
- II QFTCS Workshop, 2023, Granada (Spain)
- HPP-NL Workshop, Utrecht (Netherlands)
- UPAC Inflation Workshop, 2024, Utrecht (Netherlands)
- III QFTCS Workshop, 2024, Lisbon (Portugal)

Teaching, Assistant and Supervision

- Philosophy of Space and Time 2024-2025, Utrecht University (Co-Instructor)
- Philosophy of Science I and II 2024-2025, Utrecht University (TA)
- Philosophy of Relativity, 6 hours Summer School 2024 (Sao Paolo University) (Only Instructor)
- Philosophy of Space and Time 2023-2024, Utrecht University (TA)
- Quantum Worlds 2023-2024, Utrecht University (TA)
- Quantum Gravity 2022-2023, Radboud University Nijmegen (TA)
- Mathematical Methods II 2018-2021, University of Valencia (TA)
- General Physics 2017-2018, University of Valencia (TA)
- General Physics 2013-2014, University of Bonn (TA)
- Degree Thesis of Daniel Panadero (UV), Best Mark of the class, 2020-2021
- Master Thesis of Daniel Musson (UV), 2020-2021; Lorenzo Pisani (DCU), Best Mark of the class, 2021-2022
- Current IRC Phd. fellow, active collaboration on going; Samuel Monín (UAB), 2022-2023, one paper published and Alex Fleuren (Utrecht University), active collaboration on going.

Participation in Schools and Courses

- 2023 *Three Facets of Gravity*, Berlin (Germany)
- 2019 *20th-Saalburg School on New Methods in Theoretical Physics*, Heigenbrucken (Germany)
- 2019 *Bard Summer School on Quantum Gravity*, NY (USA)
- 2018 *Gravity @Prague 2018*, Prague (Czech Republic)
- 2018 *Mass: from the Higgs to cosmology*, Cargese (France)
- 2017 *Hot Topics in Cosmology: ICCUB School*, Barcelona (Spain)
- 2017 *Λ CDM and Beyond: Cosmology Tools*, Corfu (Greece)
- 2016 *International summer school on Cosmology*, ICTP Trieste (Italy)

Short Research Stays and ongoing collaborations

- 2023 Visit University of Granada, Spain (July)
- 2022 Visit University of Valencia, Spain (July)
- 2022 Visit University of Pavia, Italy (June)
- 2019 Complutense University, Spain (October)
- 2018 Basel University, Switzerland (November-December)
- Other current collaborations: Frank Sauerresig (Radboud University Nijmegen) Peter Taylor and Lorenzo Pisani (Dublin City University).

Refereed Journal Publications

1. **AF**, S. Monin and F. Torrenti, *Phys. Rev. D* 109, 045015 (2024) *Physical scale adiabatic regularization in cosmological spacetimes*
2. **AF** and F. Torrenti, *Phys.Lett.B* 840, 137868 (2023) *Ultraviolet-regularized power spectrum without infrared distortions in cosmological spacetimes*
3. **AF** and S. Pla, *Phys. Rev. D* 106, 065015 (2022) *Adiabatic regularization and preferred vacuum state for the $\lambda\phi^4$ field theory in cosmological spacetimes*
4. **AF**, S. Nadal and J. Navarro-Salas, *Phys. Rev. D* 104, 025003 (2021) *Renormalization, running couplings, and decoupling for the Yukawa model in a curved spacetime*
5. **AF** and J. Navarro-Salas, *Phys. Rev. D* 102, 045021 (2020) *Running gravitational couplings, decoupling, and curved spacetime renormalization*
6. **AF**, J. Navarro-Salas and S. Pla, *Phys.Rev.D* 101, 105011 (2020) *R-summed form of adiabatic expansions in curved spacetime*
7. P. Beltrán-Palau, **AF**, J. Navarro-Salas and S. Pla, *Breaking of adiabatic invariance in the creation of particles by electromagnetic backgrounds* *Phys.Rev.D* 100, 085014 (2019)
8. **AF** and J. Navarro-Salas, *Running couplings from adiabatic regularization* *Phys.Lett.B* 792 81-85 (2019)
9. **AF**, J. Navarro-Salas, S. Pla, *Role of gravity in the pair creation induced by electric fields* *Phys.Rev.D* 98, 045015 (2018)
10. J. Barbero, **AF**, J. Navarro-Salas, E. Villaseñor, *Adiabatic expansions for Dirac fields, renormalization, and anomalies* *Phys.Rev.D* 98, 025016 (2018)
11. **AF** and J. Navarro-Salas, *Pair creation in electric fields, anomalies, and renormalization of the electric current* *Phys.Rev.D* 97, 125012 (2018)
12. A. Del Rio, **AF**, J. Navarro-Salas, F. Torrentí, *Adiabatic Regularization with a Yukawa interaction* *Phys.Rev.D* 95, 105003 (2017)

Proceedings Publications

1. **AF**, and S. Pla, Proceedings of the AQFTCS, Online September 2022 <https://doi.org/10.1142/13149>. "Instantaneous vacuum and States of Low Energy for a scalar field in cosmological backgrounds"
2. **AF**, Proceedings of the MG16 Meeting on General Relativity, Online, 5 – 10 July 2021 <https://doi.org/10.1142/13149>. "Renormalization, running couplings and the conformal anomaly in curved spacetime"
3. S. Nadal, **AF**, J. Navarro Salas, Proceedings of the MG16 Meeting on General Relativity, Online, 5 – 10 July 2021 <https://doi.org/10.1142/13149>, "Renormalization and decoupling for the Yukawa model in curved spacetime".
4. **AF**, J. Navarro-Salas and S. Pla, Proceedings of the MG15 Meeting on General Relativity, University of Rome "La Sapienza", Italy, 1 – 7 July 2018 <https://doi.org/10.1142/12843>, "Pair creation in electric fields, renormalization, and backreaction"
5. **AF**, J. Navarro-Salas, A. del Rio, S. Pla, F. Torrentí, Proceedings of the MG15 Meeting on General Relativity, University of Rome "La Sapienza", Italy, 1 – 7 July 2018 <https://doi.org/10.1142/12843>, "Adiabatic regularization with a Yukawa interaction"

Extra Activities

- Member of the Management Committee of Cost Action CA21136 Cosmoverse and CA23115 RQI
- Outreach talks for High-school students: *From the Big Bang to the Higgs Boson*, Ourense (Spain), *Progress in Science*, talk dedicated to woman in physics, Valencia (Spain), *Escola d'Estiu Erasmus de Física*.
- Extra Courses: AFIM course of Astronomy (160h), Visual Basic.NET(60h), Gender Equality Online Course (CSIC)
- Referee Physics Letter A
- Quality Commission of Doctoral Degrees, AQU Catalunya
- Founder and member of *Espectre Visible*, the first LGBT association in STEM at the University of Valencia. Member of PRISMA, LGBT-STEM national association.
- Languages: Spanish (native), English (advanced), German (advanced), Galician (advanced)

- Coding skills: C, C++, Matlab, Scientific Python, Mathematica, Visual Basic, CAMB, LatticeEasy.

References

- Prof. Jose Navarro Salas, Dpt. Theoretical Physics University of Valencia (jnavarro@ific.uv.es)
- Dr. Peter Taylor, Dublin City University (peter.taylor@dcu.ie)