

Curriculum Vitae

Personal details

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Date of CV: December 5, 2023

Academic positions

Since 2022 **Postdoctoral Research Fellow** at GRAPPA Institute, University of Amsterdam, The Netherlands

Education

2019 - 2022 **Ph.D. in Physics, specialising in Cosmology**, Université de Montpellier, France
Supervisors: Vivian Poulin and Julien Laval
Thesis title: *Searching for new physics with CMB precision cosmology*

2018 - 2019 **M.Sc. in Astroparticle Physics and Cosmology**, Université de Montpellier, France
Graduated with honours
Master internship: *Signatures of dark matter in the CMB*

2013 - 2017 **B.sc. in Physics**, Universidad de Murcia, Spain and Universität Ulm, Germany (Exchange). Graduated with honours
Bachelor's thesis: *An introduction to supersymmetry*

Mentoring and supervision

Since 2023 **Co-supervision of PhD student**, University of Amsterdam, The Netherlands
PhD candidate: Fabian Zimmer

Since 2022 **Co-supervision of PhD student**, University of Amsterdam, The Netherlands
PhD candidate: Oleg Savchenko

Teaching experience

2023 - 2024 Teaching assistant for *Student Seminar Theoretical Physics*, Master's Course (24h)
University of Amsterdam, The Netherlands

2023 Teaching assistant for *Academic Skills for Research*, Master's Course (40h)
University of Amsterdam, The Netherlands

2020 Tutored for *Fundamentals of Physics for Biologists*, Undergrad Course (64h)
Université de Montpellier, France

Technical skills

Coding PYTHON, PYTORCH, C/C++, MATHEMATICA, L^AT_EX, Bash, git, Slurm

Software Extensive knowledge of CLASS (Boltzmann solver), MONTE PYTHON (likelihood-based inference) and SWYFT (deep learning, simulation-based inference)

Languages

Spanish	Native
English	C1
French	C1

General contributions

Since 2023	Referee for journals (Astronomy & Astrophysics)
Since 2023	Member of Euclid collaboration
2023 - 2024	Organizer of bi-weekly <i>Amsterdark</i> Seminar Series
Since 2022	Handler of official Twitter/X account for GRAPPA
Nov. 2023	Co-organizer of ISAPP PhD school <i>Exploring the dark universe</i> (13-19 Nov. 2023). Texel island, The Netherlands.

Invited seminars and talks

Oct. 2023	LUPM Cosmology Seminar , Montpellier (France)
June 2023	Université Libre de Bruxelles PhysTh Seminar , Brussels (Belgium)
Mar. 2023	Instituto de Astrofísica de Canarias Seminar , Tenerife (Spain) [remote]
Nov. 2022	Physics Reports Seminar Series [remote]
Sep. 2022	UWC Cosmology Seminar , Cape Town (South Africa) [remote]
June 2022	IJCLab Cosmology Seminar , Orsay (France)
Dec. 2021	MPA Cosmology Seminar , Garching (Germany) [remote]
Nov. 2021	Stony Brook University Seminar , Long Island (USA)
Nov. 2021	NYU/CCA Cosmology meeting , New York (USA) [remote]
Nov. 2021	University of Maryland Seminar , Washington D.C. (USA)
Nov. 2021	John Hopkins University Seminar Series , Baltimore (USA)
Nov. 2021	Scuola Internazionale Superiore di Studi Avanzati Seminar , Trieste (Italy)
Oct. 2021	Institut de Ciències del Cosmos Seminar Series , Barcelona (Spain) [remote]
Oct. 2021	Instituto de Física Corpuscular Seminar Series , Valencia (Spain)
Oct. 2021	Instituto de Física Teórica Seminar Series , Madrid (Spain)
May 2021	Institute d'Astrophysique de Paris ICAP meeting , Paris (France) [remote]

Contribution to conferences and workshops

- Nov. 2023 *Debating the potential of machine learning in astronomical surveys, ML-IAP/CCA 2023*, Paris (France)
- Oct. 2023 *Atelier Théorie, Univers et Gravitation, TUG 2023*, Paris (France)
- June 2023 *Third EuCAPT Annual Symposium, Geneva @CERN* (Switzerland)
- May 2023 *Progress on Old and New Themes in cosmology, PONT 2023*, Avignon (France)
- July 2022 *Intriguing inconsistencies in the growth of structure over cosmic time*, Sesto (Italy)
- June 2022 *News from the dark (Episode 7: On Dark Matter Subhalos)*, Montpellier (France)
- Jan. 2022 *56th Rencontres de Moriond (Cosmology session)*, La Thuile (Italy)
- Dec. 2021 *Atelier Théorie, Univers et Gravitation, TUG 2021*, Paris (France)
- May. 2021 *XIV International Workshop on Interconnections between Particle Physics and Cosmology, PPC 2021*, Oklahoma (USA) [remote]
- Apr. 2021 *Rencontres de Physique des Particules, RPP 2021*, Tours (France) [remote]
- Dec. 2020 *Progress on Old and New Themes in cosmology, PONT 2020*, Avignon (France) [remote]

Publications

Leading contribution is indicated in **bold**.

- (A1) **G.F. Abellán**, M. Braglia, M. Ballardini, F. Finelli and V. Poulin, *Probing Early Modification of Gravity with Planck, ACT and SPT*, [2308.12345](#)
- (A2) N. Schöneberg, **G.F. Abellán**, T. Simon, A. Bartlett, Y. Patel and T. L. Smith, *The weak, the strong and the ugly – A comparative analysis of interacting stepped dark radiation*, [2306.12469](#)
- (A3) **G.F. Abellán** and G. Facchinetti, *Minihalos as probes of the inflationary spectrum: accurate boost factor calculation and new CMB constraints*, [JCAP 06 \(2023\) 032](#) [[2304.02996](#)]
- (A4) N. Schöneberg and **G.F. Abellán**, *A step in the right direction? Analyzing the Wess Zumino Dark Radiation solution to the Hubble tension*, [JCAP 12 \(2022\) 001](#) [[2206.11276](#)]
- (A5) J. I. Juan, P. D. Serpico and G. F. Abellán, *The QCD phase transition behind a PBH origin of LIGO/Virgo events?*, [JCAP 07 \(2022\) 009](#) [[2204.07027](#)]
- (A6) T. Simon, **G.F. Abellán**, P. Du, V. Poulin and Y. Tsai, *Constraining decaying dark matter with BOSS data and the effective field theory of large-scale structures*, [Phys. Rev. D 106 \(2022\) 023516](#) [[2203.07440](#)]
- (A7) E. Abdalla et al., *Cosmology intertwined: A review of the particle physics, astrophysics, and cosmology associated with the cosmological tensions and anomalies*, [JHEAp 34 \(2022\) 49](#) [[2203.06142](#)]
- (A8) T. L. Smith, M. Lucca, V. Poulin, G. F. Abellán, L. Balkenhol, K. Benabed et al., *Hints of early dark energy in Planck, SPT, and ACT data: New physics or systematics?*, [Phys. Rev. D 106 \(2022\) 043526](#) [[2202.09379](#)]
- (A9) **G.F. Abellán**, Z. Chacko, A. Dev, P. Du, V. Poulin and Y. Tsai, *Improved cosmological constraints on the neutrino mass and lifetime*, [JHEP 08 \(2022\) 076](#) [[2112.13862](#)]
- (A10) N. Schöneberg, **G.F. Abellán**, A. Pérez Sánchez, S. J. Witte, V. Poulin and J. Lesgourgues, *The H_0 Olympics: A fair ranking of proposed models*, [Phys. Rept. 984 \(2022\) 1](#) [[2107.10291](#)]

- (A11) **G.F. Abellán**, R. Murgia and V. Poulin, *Linear cosmological constraints on 2-body decaying dark matter scenarios and the S_8 tension*, *Phys. Rev. D* **104** (2021) 123533 [[2102.12498](#)]
- (A12) R. Murgia, G. F. Abellán and V. Poulin, *Early dark energy resolution to the Hubble tension in light of weak lensing surveys and lensing anomalies*, *Phys. Rev. D* **103** (2021) 063502 [[2009.10733](#)]
- (A13) **G.F. Abellán**, R. Murgia, V. Poulin and J. Lavalley, *Implications of the S_8 tension for decaying dark matter with warm decay products*, *Phys. Rev. D* **105** (2022) 063525 [[2008.09615](#)]