

GABRIELE MONTEFALCONE

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INSTITUTIONAL HISTORY

Doctor of Philosophy in Physics

📅 Sep 2021 ▶ Now

University of Texas at Austin, Weinberg Institute for Theoretical Physics

Austin, TX

Advised by Katherine Freese

Bachelor of Arts in Physics

📅 Sep 2016 ▶ Jun 2020

Princeton University, Department of Physics

Princeton, NJ

Senior Thesis (advised by Lyman Page):  [Exploring properties of galaxy clusters with the Atacama Cosmology Telescope](#)

Junior Paper II (advised by Paul J. Steinhardt):  [Exploring extra dimensions with constraints on the variation of Newton's Constant](#)

Junior Paper I (advised by Cristiano Galbiati):  [The DarkSide-LowMass Experiment and its Physics Potential](#)

PAPERS

Journal Publications

4. GM, V. Aragam, L. Visinelli, K. Freese, *Observational constraints on warm natural inflation*, [JCAP 03 \(2023\) 002](#)
3. GM, V. Aragam, L. Visinelli, K. Freese, *Constraints on the scalar-field potential in warm inflation*, [Phys.Rev.D 107 \(2023\) 6, 063543](#)
2. GM, M. H. Abitbol, D. Kodwani, R.D.P. Grumitt, *Inpainting CMB maps using partial convolutional neural networks*, [JCAP 03 \(2021\) 055](#)
1. GM, P.J. Steinhardt, D.H. Wesley, *Dark energy, extra dimensions, and the Swampland*, [JHEP 06 \(2020\) 091](#)

Preprints

6. N. Bellomo, K. Boddy, S. Moltner, GM, *Investigation of CMB constraints for dark matter-electron absorption*, [arXiv:240X.XXXXX](#)
5. GM, B. Wallisch, K. Freese, *Probing free-streaming radiation with the Cosmic Microwave Background*, [arXiv:240X.XXXXX](#)
4. GM, B. Shams Es Haghi, K. Freese, *Freeze-in from Warm Inflation*, [arXiv:2401.XXXXX](#)
3. GM, Rudnei O. Ramos, Gustavo S. Vicente, K. Freese, *The efficient suppression of eternal inflation in a strongly dissipative warm inflation regime*, [arXiv:2401.XXXXX](#)
2. GM, Rudnei O. Ramos, Gustavo S. Vicente, K. Freese, *Defying eternal inflation in warm inflation with a negative running*, [arXiv:2311.03487 \[astro-ph.CO\]](#) (accepted for publication by JCAP)
1. GM, V. Aragam, L. Visinelli, K. Freese, *WarmSPy: a numerical study of cosmological perturbations in warm inflation*, [arXiv:2306.16190 \[astro-ph.CO\]](#) (accepted for publication by JCAP)

✿ AWARDS & FELLOWSHIPS

Steven Weinberg Summer Fellowship

📅 May 2023 ▶ Aug 2023

Texas Center for Cosmology and Astroparticle Physics (TCCAP), University of Texas at Austin

Awarded annually to one member of the TCCAP. Stipend of \$7,500 and tuition for summer term included.

A. G. Shenstone Prize Winner in Physics


📅 Jun 2018 - Jun 2019

Department of Physics, Princeton University

Recognizes annually outstanding Physics undergraduates who have shown excellence in course work and promise in independent research. Awarded prize of \$750.

Invited Talks

Particle Production and Thermal Effects in Inflation

 Feb 2024

Physics Department, King's College London

Virtual on Zoom

 Freeze-in in Warm Inflation

Cosmology-Astro Seminar

 Oct 2023

Leinweber Center for Theoretical Physics, University of Michigan

Ann Arbor, MI

 [The Imprint of cosmic neutrinos & other light-relics in the CMB](#)

Theoretical Cosmology Seminar

 Jun 2023

CoPS division, the Oskar Klein Center, Department of Physics, Stockholm University

Stockholm, Sweden

 [Warm Inflation: Warm Natural inflation and other recent developments](#)

At the University of Texas at Austin

Weinberg Institute, Brown Bag Seminar

 November 2023

 [The Imprint of cosmic neutrinos & other light-relics in the CMB](#)

Physics Concerto Seminar Series

 Oct 2023

 [Beyond the Big Bang: Delving into Inflationary Cosmology](#)

Weinberg Institute, Brown Bag Seminar

 January 2023

 [Warm Natural Inflation](#)

VISITS

MIAPbP

 July 1 ▶ 19 2024

Munich Institute of Astro-,Particle & BioPhysics

Munich, Germany

Summer School on Quantum Aspects of Inflationary Cosmology

University of Michigan

 Oct 15 ▶ 20 2023

Leinweber Center for Theoretical Physics, University of Michigan

Ann Arbor, MI

Visiting Researcher

Stockholm University

 Jun 1 ▶ 30 2023

Oskar Klein Center, Department of Physics, Stockholm University

Stockholm, Sweden

Visiting Researcher

Oxford University

 Jun 1 ▶ August 10 2019

Department of Astrophysics, Oxford University

Oxford, United Kingdom

Research Intern

OUTREACH

Physics Concerto Seminar Series

 Sep 2023 ▶ Now

Department of Physics, University of Texas at Austin

Austin, Tx

 physicsconcerto.com

Founder and organizer of the Physics Concerto, a peer-to-peer seminar series with the aim of enabling graduate students to delve into fields and roles beyond their own concentration at an advanced, yet comprehensible, level.

Physics Competition by Physics Unlimited

 Nov 2019

Department of Physics, Princeton University

Princeton, NJ

Directed the organizing committees and designed both onsite and online exams with challenging physics problems.

Teaching Assistant

Phy 321 - Plan II Modern physics

 Spring 2023

Honors Plan II course on particle physics

University of Texas at Austin

Led discussion classes and supported the homework administration and grading. Taught three lectures on special relativity, principles of general relativity and the cosmic microwave background.

Phy 303k - General Physics II

 Spring 2023

Introductory course in Electromagnetism for engineers

University of Texas at Austin

Led discussion classes and supported the homework grading.

Phy 355 - Modern Physics

 Fall 2021 ▶ Spring 2022

Introductory course in Quantum Mechanics, Statistical Mechanics and Special Relativity

University of Texas at Austin

Led discussion classes and supported the homework administration and grading.

Phy 104 - Electromagnetism

 Spring 2021

Introductory course in Electromagnetism

Princeton University

Led discussion classes and supported the homework grading. Contributed to the revision process of a new textbook for the course by Professor Meyers.

Phy 102 - Electromagnetism

 Spring 2021

Introductory course in Electromagnetism for pre-med students

Princeton University

Supported the labs and homework administration and grading.

Phy 101 - Classical Mechanics

 Fall 2020

Introductory course in Classical Mechanics for pre-med students

Princeton University

Supported the labs and homework administration and grading.

SKILLS & INTERESTS

</> Digital Competence

Data Analysis in Python, Mathematica and C++; Machine Learning with Keras; Proficient user in \LaTeX .

Languages

Native Italian; Proficient English; Intermediate Spanish.

Other Interests

Running; Italian Cooking; Motorcycle Riding; Backpacking; Acoustic Guitar.