

Mauricio Gamonal

CONTACT INFORMATION	322 Whitmore Lab University Park, Pennsylvania State University State College, PA 16801 USA	mgamonal@psu.edu linktr.ee/MauricioGamonal Orcid: 0000-0002-0677-4926
EDUCATION	Ph.D., Physics Candidate , Pennsylvania State University, State College, PA, USA Currently Dissertation Advisor: Prof. Eugenio Bianchi.	
	M.Sc., Physics , Pontificia Universidad Católica de Chile, Santiago, Chile June 2021 Degree conferred with maximum distinction. Thesis Advisor: Prof. Jorge Alfaro.	
	B.Sc., Physics , Pontificia Universidad Católica de Chile, Santiago, Chile July 2018 Degree conferred with maximum distinction.	
RESEARCH INTERESTS	How to probe the fundamental structure of spacetime? As a central topic, I'm interested in the exploration of the interface between theory and phenomenology in different contexts, from primordial cosmology to quantum systems. This involves a theoretical understanding of the semi-classical limits of some approaches to Quantum Gravity that are of particular interest, e.g., effective field theories and QFT in curved spacetime, Loop Quantum Gravity, and Spinfoams. Additionally, I've studied theories beyond General Relativity and their consequences in nature, such as the emission and propagation of gravitational waves, the evolution of the cosmos, and other astrophysical phenomena.	
RESEARCH EXPERIENCE	Research Assistant , Pennsylvania State University E. Bianchi: Effective theories of inflation, phenomenology of QG. Summer 2022 – Now A. Ashtekar: On the quantum nature of the Coulombic interaction. Summer 2023	
	Research Assistant , Pontificia Universidad Católica de Chile J. Alfaro: GWs in Λ CDM and inflation in Einstein-Cartan. Spring 2018–Spring 2021 G. During: Non-linear fluids in the Kolmogorov regime. Summer 2016	
TEACHING EXPERIENCE	Teaching Assistant , Pennsylvania State University PHYS 250, Introductory Physics I. Fall/Spring 2022, Spring 2023 PHYS 213, Fluids and Thermal Physics. Summer 2022 PHYS 214, Wave Motion and Quantum Physics. Summer 2022	
	Teaching Assistant , Pontificia Universidad Católica de Chile FIZ0211, Thermodynamics. Spring 2020 FIZ0311, Modern Physics. Falls 2018-2019 FIZ3150, General Relativity. Fall 2018 FIZ0312, (Lab) Thermodynamics. Spring 2017, Spring 2019 & Fall 2017 FIZ0312, (Lab) Waves and Optics. Spring 2017 FIS109, General Physics. Falls/Springs 2016-2017 MAT1610L, (Lab) Calculus I. Falls/Springs 2015-2021	

PUBLICATIONS IN PROGRESS	6. E. Bianchi, M. Gamonal , (2024) <i>A Feynman's $i\epsilon$ prescription for the EPRL model of spinfoams</i> . 5. E. Bianchi, M. Gamonal , (2024) <i>N3LO corrections to power spectrum for non-Bunch-Davies vacuum in effective theories of inflation</i> .	
REFEREED PUBLICATIONS	4. M. Gamonal , <i>Slow-roll inflation in $f(R, T)$ gravity and a modified Starobinsky-like inflationary model</i> , <i>Phys. Dark Univ.</i> 31 , 100768 (2021) [arXiv:2010.03861]. 3. J. Alfaro and M. Gamonal , <i>A nontrivial footprint of standard cosmology in the future observations of low-frequency gravitational waves</i> , <i>Gen. Rel. Grav.</i> 52 , no.12, 118 (2020) [arXiv:1902.04550].	
UNREFEREED PUBLICATIONS	2. E. Bianchi, M. Gamonal , (2024) <i>Primordial power spectrum at N3LO in effective theories of inflation</i> [arXiv:2405.03157]. 1. M. Gamonal , (2021) <i>Cosmic inflation in modified models of gravity and an analysis on gravitational waves</i> , Master's thesis at Pontificia Universidad Católica de Chile.	
HONORS AND AWARDS	LQG Summer School 2024 Grant , Loops'24 LOC/Blaumann Foundation. 2024 Homer F. Braddock Fellowship , Pennsylvania State University. 2022 David H. Rank Physics Award , Pennsylvania State University. 2022 Blaumann Research Grant (Call #1) , Blaumann Foundation. 2022 Fulbright Scholarship , Fulbright Commission - ANID # 56190016. 2021–2025	
FELLOWSHIPS AND HONOR SOCIETIES	Tri-Alpha, Eta Psi Chapter 2024–Present First-Generation Honor Society. American Physical Society, member 2022–Present Division of Gravitational Physics.	
PROFESSIONAL ACTIVITIES, OUTREACH, AND SERVICE	Journal referee Annals of Physics. Conference organizer 1st PizzaSeminar poster session, PUC, Chile March 2020 Two-day online poster session, 20 participants. School of Gravity and General Relativity, CECs, Valdivia, Chile March 2020 Week-long national summer school, 50 participants. Conference chair APS Mid-Atlantic Section, State College, PA, USA. December 2022 La parte y el todo VIII, Afunalhue, Chile. January 2021 Seminar organizer Primordial Universe and Gravitation (PUG) seminar, IGC, Penn State. From Fall 2024 PizzaSeminar, PUC, Chile. Spring 2020–Spring 2021 Outreach TA in Physics LATAM . June–September 2023 Online lectures on General Relativity for Latin students.	

Physics and Astronomy for Women+ Outreach activities performed in an elementary school.	May 2022
Desde la Ciencia Marathon Outreach online talk on gravitational waves (in Spanish).	June 2020
Science communication student organization: Física Itinerante Positions: Coordinator, Community Manager and Executive Director (2016).	2015–2018

INVITED TALKS	7. GravUC Seminar , Pontificia Universidad Católica de Chile	December 2023
	6. Primordial Universe and Gravitation Seminar, IGC, Penn State	October 2023
	5. Primordial Universe and Gravitation Seminar, IGC, Penn State	November 2022
	4. La Parte y el Todo VIII, Afunalhue, Chile (online talk)	January 2021
	3. PizzaSeminar 2020 (online talk , in Spanish)	June 2020
	2. VI CECFA Congress, Concepción, Chile.	August 2019
	1. La Parte y el Todo VII, Afunalhue, Chile.	January 2019

CONTRIBUTED TALKS (SELECTED)	9. Loops' 24 , Florida Atlantic University, Fort Lauderdale, FL, USA.	May 2024
	8. 6th Neighborhood Workshop, Penn State, State College, PA, USA.	April 2024
	7. Cosmology from Home 2023 (online, pre-recorded talk).	July 2023
	6. American Physical Society, April Meeting , Minneapolis, MN, USA.	April 2023
	5. American Physical Society, Mid-Atlantic Section , State College, PA, USA.	December 2022
	4. XXII Chilean Symposium of Physics, UTEM, Santiago, Chile.	November 2020
	3. Cosmosur V, UV & PUCV, Valparaíso, Chile.	October 2019
	2. XII Latin American Symposium on High Energy Physics, Lima, Perú.	November 2018
	1. XXI Chilean Symposium of Physics, UA, Antofagasta, Chile.	November 2018

ATTENDANCE AT SUMMER SCHOOLS & WORKSHOPS	6. Basics of Quantum Gravity , ISQG (online).	May–November 2022
	5. Loops' 22 Summer School , Aix-Marseille & ENS Lyon, France.	July 2022
	4. Loop Quantum Gravity Summer School (online).	June 2021
	3. Vienna summer school on gravitational quantum physics (online).	September 2020
	2. CosmoAndes 2018, Pontificia Universidad Católica de Chile.	January 2018
	1. CosmoConce VI, Universidad del Bio-Bio, Concepción, Chile.	December 2017

COMPUTATIONAL SKILLS	Languages —Experience with MATHEMATICA, Python, and L ^A T _E X.
	Other software —Python libraries (Numpy, Scipy, etc), CAMB, Cadabra, xAct, Maple, wxMaxima.
	Operating systems —Mac OS, Linux, Windows.