CURRICULUM VITAE (maximum 4 pages)

CV date	30-08-2021	

Part A. PERSONAL INFORMATION

First and Family name	JON URRESTILLA URIZABAL		
Social Security, Passport, ID number	72450353-P	Age	47
Researcher numbers	Researcher ID	ABA-7658-2021	
	Orcid code	0000-0002-4221-2859	

A.1. Current position

Name of University/ Institution	University of Basque Country UPV/EHU		
Department	Department of Physics		
Address and Country	PO Box 644, 48080 Bilbao, Spain		
Phone number	946018437	E-mail	jon.urrestilla@ehu.eus
Current position	Profesor Titular	From	March 2011
Espec. cód. UNESCO	2101, 2101.05, 2212.02, 2212.04, 2290.01		
Palabras clave	Cosmology, Topological Defects, Field Theory, Inflation, CMB, GW		

A.2. Education

PhD	University	Year
	University of the Basque Country UPV/EHU	2003

A.3. JCR articles, h Index, thesis supervised…

- **Supervised 2 Ph.D. thesis**:
  - Joanes Lizarraga, “Topological defects: observing High energy physics in the CMB”, (2016). Sobresaliente cum laude. Premio Koldo Mitxelena. Premio extraordinario de doctorado.
  - Asier Lopez-Eiguren, “Looking for the high energy physics in the early universe”, (2017). Sobresaliente cum laude. Mención de Tesis Internacional. Premio Koldo Mitxelena.
- **Currentyl co-supervising 2 Ph.D. thesis**:
  - Daniel Jiménez, estimated for summer 2022, co-supervised with José Juan Blanco Pillado
  - Ander Urio, estimated for summer 2024, co-supervised with Joanes Lizarraga
- **Total number of papers**: 48 (published in Q1 journals).
- **Total number of citations**: 1907 (From Inspire-HEP).
- **h-factor**: 24 (From Inspire-HEP).
- **sexenios**: 3

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

I obtained my degree in Physics (*Licenciatura*) from the University of the Basque Country in 1997. My fourth year at university I was of an exchange programme, so I studied for a year at the University of Texas at Austin (USA). Moreover, my last year I was awarded a *collaboration grant* to work in the Department of Theoretical Physics. After one year doing research at a Technology Center (with a Fellowship from the Basque Technology Center foundation) I went back the Department of Theoretical Physics to start my postgraduate studies. I obtained my *Licenciatura con Grado* (analogous to a Masters degree) in 2000 with the work “The instability of global monopole revisited”.

During my doctoral studies, I visited several institues for lenghy periods of time, most notably The University of Berkeley (California) and the University of Sussex (UK). I got the degree of European Doctor with the maximum grade "Sobresaliente Cum Laude" for the work: *Exotic Properties of Extended Objects in Field Theory",* supervised by Prof. Ana Achúcarro. My PhD research studied physics of the Early Universe using a combination of analytical techniques and high performance numerical simulations.

My first postdoc was at the University of Sussex (2003-2005) with a Grant by the Spanish Science Ministry. Then, Tufts University appointed me as a Research Associate for two years (2005-2007), but I declined after the first year because I was awarded a prestigious Marie Curie Fellowship to work at the University of Sussex (2006-2008). I was invited to stay one more year at Sussex as a Research Fellow (2009), until I finally came back to the University of the Basque Country in 2009 as a *Profesor adjunto*, and became *Profesor Titular* in 2011.

Most of my research career has been devoted to the study of Physics of the Early Universe and its interplay with Cosmology, in order to obtain observables to compare to cosmological data. The main ingredient my research has been based on are *Topological Defects*. These extended objects could have formed in cosmological phase transitions, and could be understood as regions in which the high energy symmetry phase has been trapped.

From an observational point of view, these defects are very rich. They can leave imprints in the anisotropies of the temperature and the polarization Cosmic Microwave background, and our work has calculated those. Topological defects can also produce primordial Gravitational Waves, and the accurate estimate of these is of foremost importance in view of the upcoming Gravitational Wave experiments, such as Lisa.

From a technical point of view, topological defects are very complicated objects to study. They have very non-linear dynamics, and the study of networks of defects necessarily has to include extensive numerical work. On the one hand we perform simulations in super computers to characterize the network of defects, and obtain cosmological predictions. On the other, we propose theroetical effective models, encapsulating the basic properties of different defects, and use numerical simulations to determine any free parameter in the model.

The papers included below are some of the most relevant:

Part C. RELEVANT MERITS

C.1. Some recent/relevant publications

1. Loop decay in Abelian-Higgs string networks
M. Hindmarsh, , J. Lizarraga, A. Urio, J. Urrestilla
Phys. Rev. D104 (2021) 4, 043519

2. Approach to scaling in axion string networks
M. Hindmarsh, J. Lizarraga, A. Lopez-Eiguren, J. Urrestilla
Phys.Rev.D 103 (2021) 10, 103534

3. Irreducible background of gravitational waves from a cosmic defect network: update and comparison of numerical techniques
D.G. Figueroa, M. Hindmarsh, J. Lizarraga, J. Urrestilla
Phys. Rev. D102 (2020) 10, 103516

4. Exciting the domain wall soliton
J.J. Blanco-Pillado, D. Jiménez-Aguilar, J. Urrestilla
JCAP 01 (2021) 027

5. The scaling density of axions
M. Hindmarsh, , J. Lizarraga, A. Lopez-Eiguren, J. Urrestilla
Phys. Rev. Lett. 124 (2020) 2, 021301

6. Cosmic Microwave Background constraints for global strings and global monopoles
A. Lopez-Eiguren, J. Lizarraga, M. Hindmarsh, J. Urrestilla
JCAP 1707 (2017) 026

7. Scaling from gauge and scalar radiation in Abelian Higgs string networks
M. Hindmarsh, J. Lizarraga, J. Urrestilla, D. Daverio, M. Kunz
Phys. Rev. D96 (2017) 023525

8. New CMB constraints for Abelian Higgs cosmic strings
J. Lizarraga, J. Urrestilla, D. Daverio, M. Hindmarsh, M. Kunz
JCAP 1610 (2016) 042

9. Can topological defects mimic the BICEP2 B-mode signal?
J. Lizarraga, J. Urrestilla, D. Daverio, M. Kunz, A.R. Liddle, M. Hindmarsh
Phys. Rev. Lett. 112 (2014) 171301

10. Exact Scale-Invariant Background of Gravitational Waves from Cosmic Defects
D. G. Figueroa, M. Hindmarsh, J. Urrestilla
Phys. Rev. Lett. 110 (2013) 10, 101302

11. Cosmic string parameter constraints and model analysis using small scale CMB data
J. Urrestilla, N. Bevis, M. Hindmarsh, M. Kunz
JCAP 1112 (2011) 021

12. Evolution of cosmic superstring networks: a numerical simulation
J. Urrestilla, A. Vilenkin
JHEP 0802 (2008) 037

13. Fitting CMB data with cosmic strings and inflation
N. Bevis, M. Kunz, M. Hindmarsh, J. Urrestilla
Phys. Rev. Lett. 100 (2008) 021301

C.2. Research projects and grants

Title: **Early Universe and fundamental physics (Grupos consolidados)**
Funding Agency: **Basque Government**
Principal Investigator: **Jon Urrestilla**
Duration**: 2016-2021**
Level of funding: **412426 €**
Role: **Principal Investigator**

Title: **Early Universe cosmology and high energy physics**
Funding Agency: **Minecog**
Principal Investigator: **José Juan Blanco Pillado**
Duration**: 2019-2021**
Level of funding: **124630 €**
Role: **Investigator**

Title: **Early Universe cosmology probes to high energy physics and quantum field theory methods**
Funding Agency: **Minecog**
Principal Investigator: **José Juan Blanco Pillado**
Duration**: 2016-2018**
Level of funding: **53361 €**
Role: **Investigator**

Title: **Interactions between cosmic Strings, gravitational waves and the CMB**
Funding Agency: **University of the Basque Country, EHUA12/11**
Principal Investigator: **Jon Urrestilla**
Duration**: 2012-2014**
Level of funding: **7400 €**
Role: **Principal Investigator**

Title: **Non-Perturbative methods in Quantum Field Theory and Applications**
Funding Agency: **Ministry of Economy and Competitivity (MINECO), FPA2012-34456**
Principal Investigator: **Juan Luis Mañes**
Duration**: 2012-2015**
Level of funding: **38200 €**
Role: **Investigator**

Title: **IT-559-10**
Funding Agency: **Basque Government**
Principal Investigator: **Íñigo Luis Egusquiza Egusquiza**
Duration : **2010- 2015**
Level of funding: **35000 €**
Role: **Investigator**

C.5 Recent Invited talks:

- Comology Colloquium at the Royal Observatory of Edinburgh, UK, 2015
- eLisa Cosmology Workshop, CERN, Switzerland, 2015
- Cosmic Strings, Arizona, US 2014
- Quantized Flux in tightly Knotted and Linked Systems, University of Cambridge, UK, 2012
- Cosmo12, Beijin, China, 2012
- Gravitation and cosmology Workshop, Oldenburg-Bremen, Germany, 2009
- Strings and Superstrings in observational Cosmology, Paris, France, 2007
- Journée Tourangelles de Relativité, Tours, France, 2007

C.6 Professional Services

- Referee in international science journals: Physical Review Letters, Physical Review D, Journal of Cosmology and Astroparticle Physics, Monthly Notices of the Royal Astronomical Society, Classical and Quantum Gravity, International Journal of Modern Physics D
- Reviewer for the Spanish Agencia Estatal de Investigación and the Argentinian Science Ministry
- Member of the eLisa cosmology group
- Member of PhD Committee:
  - Andrés Díaz-Gil Díaz-Tejedor (Universidad Autónoma de Madrid), 2009
  - Parinya Sirimachan, (Jacobs university, Bremen), 2011
  - Francisco Torrentí Salom (Universidad Autónoma de Madrid), 2018
  - João André Viegas Morais (Universidad del País Vasco-Euskal Herriko Unibertsitatea), 2018
  - Mikel Alvarez Urkiola (Universidad del País Vasco-Euskal Herriko Unibertsitatea), 2021
- Conference organizing committee: Taller de Altas Energías (TAE), Bilbao 2011; Azores Cosmology Summer School, Azores (Portugal), 2011; Cosmic Strings@Brazil, São Paulo (Brazil) 2016; 7th Iberian Gravitational Wave Meeting (Bilbao) 2017

C.7 Recent teaching & admin:

- Lecturer at the University of the Basque Country (2009-Present)
  Undergraduate, Master and PhD levels
  Subjects include *Quantum Mechanics*, *Ordinary Differential Equations, Partial Differential Equations, General Physics, Fields&Particles, Science&Society*
  Excellent Student feedback
- Lecturer and Convenor at the University of Sussex (2006-2009)
  Undergraduate, Master and PhD levels
  Subjects include *General Relativity*, *Early Universe*, *Complex Variables for Physics*, *Advanced Electromagnetism* and *Data Analysis Techniques*
- Supervisor of 5 MSc research Projects
- Member of the "Comisión de estudios de Grado de Física" (2009-2013)
- Erasmus coordinator for physics (2013-present)
- Teacher: *Scientific Summer Campus*, University of the Basque Country (2011,2012,2013)

C.8 Previous Fellowships and contracts:

- Marie Curie Intra-European Fellowship, University of Sussex (UK) 2006-08
- Postdoctoral contract (funded by the American Science Foundation), Tufts University (USA) 2005-07; declined after one year for Marie Curie Fellowship
- Postdoctoral Research Associate (funded by the Spanish Ministry), University of Sussex (UK) 2003-05
- Doctoral Fellowship (funded by the Spanish Ministry of Science), University of the Basque Country, 2000-03
- Marie Curie Training site Fellowship, University of Sussex (2001, 2003)
- Doctoral student (funded by the University of the Basque Country), University of the Basque Country, 1999-2003; declined after first year for Spanish Ministry Fellowship
- Collaboration grant, University of the Basque Country, 1997