

Part A. PERSONAL INFORMATION		CV date	19/02/2019
First and Family name	JUAN LUIS MAÑES PALACIOS		
Social Security, Passport, ID number	14919529-G	Age	63
Researcher numbers	Researcher ID		
	Orcid code		

A.1. Current position

Name of University/Institution	Universidad del País Vasco UPV/EHU		
Department	Departamento de Física de la Materia Condensada		
Address and Country	PO Box 644, 48080 Bilbao, Spain		
Phone number	+34946015396	E-mail	wmpmapaj@lg.ehu.es
Current position	Catedrático de Universidad	From	12/12/1995
Espec. cód. UNESCO	2212.12, 2212.02, 2290.01, 2211.10		
Palabras clave	Quantum Field Theory, String theory, Anomalies		

A.2. Education

PhD	University	Year
Doctor Ingeniero Industrial	Universidad del País Vasco UPV/EHU	1981
Ph. D. Physics	U. C. Berkeley, USA	1986

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

- **Total number of papers:** 34 (30 in Q1 journals)
- **Total number of citations:** 1252 total, of which 572 since 2013 (From Google Scholar + Inspire- HEP + NASA ADS)
- **h-factor:** 17
- **sexenios:** 5 (last one for the period 2008-2013)

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

I obtained an Engineering's degree in 1977, followed in 1979 by a B. Sc. in Physics with "Premio Extraordinario de Licenciatura" both from the University of the Basque Country.

In 1980 I completed a Ph. D. Thesis on Landau's theory of phase transitions under the supervision of M. Tello. I defended this thesis at the School of Industrial Engineering in Bilbao, obtaining a Ph. D. degree in Engineering.

In 1981 I got a Fulbright Scholarship and went to the US to complete my studies in Physics. After obtaining a MSc. In Physics from Caltech, I spent four years at U. C. Berkeley working under the supervision of Bruno Zumino towards a Ph. D. Physics degree, which I obtained in 1986.

In 1987 I went to Princeton U. with a Research Associate contract, where I worked on string theory for two and a half years until 1989. From 09/89 to 02/90 I was a visitor at CSIC in Madrid and then went on to work as Assistant Professor (Profesor Titular) at the University of the Basque Country in Bilbao. After that I spent one and a half years (03/91 to 02/92 and 03/93 to 09/93) as Scientific Associate at the Theory division at CERN.

During my research career I have worked on different subjects, most of them in the area of Theoretical and High Energy Physics and a few in Condensed Matter Physics.

Concretely, for my Ph. D. thesis with M. Tello I considered several applications of Landau's theory of phase transitions in crystals. This theory combines basic analyticity assumptions

with a systematic implementation of the system symmetries using group theory. For non-homogeneous order parameters (Ginzburg-Landau theory) one writes the most general derivative expansion compatible with the symmetries.

This combination of symmetry requirements and derivative expansions is at the heart of effective field theories, and I have found the skills gained very useful in later years, both for systems with continuous Lorentz or galilean symmetries (see for instance [1,2] and [5] in the publications list **C.1**) and for systems with discrete symmetries [3,4,6]. In particular, in [6] I showed that crystals with some space-group symmetries necessarily contain Weyl fermions in their spectrum.

In the area of Theoretical and High Energy Physics I began by working on gauge anomalies in my Ph. D. thesis with B. Zumino at Berkeley, finding a way to compute the gauged Wess-Zumino action using differential geometric techniques and studying the general algebraic structure of gauge anomalies in collaboration with Stora and Zumino [10].

At Princeton I worked on several problems in String Theory, both in first quantized and in String Field Theory, and collaborated with D. J. Gross on the high energy scattering of open strings [9]. At CERN I collaborated with Luis Alvarez-Gaumé on (super) matrix models on different attempts to find a non-perturbative formulation of quantum gravity in low dimensions.

Back at the University of the Basque Country I worked on my own on several problems related to the decay of highly excited strings, finding a purely algebraic method to compute de decay rates and branching ratios of two-body decays [8], and in collaboration with M. A. Vázquez-Mozo and J. L. Barbón on the properties of a class of non-supersymmetric black holes.

More recently I have been working with M. Valle on different applications of thermal field theory to the unitary Fermi gas [5] and to the study of gravitational and gauge anomalies in relativistic Fermi gases [1,2].

Part C. RELEVANT MERITS

C.1. Publications (including books)

1. Non-Abelian Anomalous (Super)Fluids in Thermal Equilibrium from Differential Geometry

Juan L. Mañes, E. Megías, Manuel Valle, M. A. Vázquez-Mozo
JHEP 1811 (2018) 076

2. Parity violating gravitational response and anomalous constitutive relations

Juan L. Mañes, Manuel Valle
JHEP 1301 (2013) 008

3. Gauge fields from strain in graphene

Fernando de Juan, Juan L. Mañes, María A. H. Vozmediano
Phys. Rev. B 87, 165131 (2013)

4. Existence of bulk chiral fermions and crystal symmetry

Juan L. Mañes
Phys. Rev. B 85, 155118 (2012)

5. Effective theory for the Goldstone field in the BCS-BEC crossover at $T=0$

Juan L. Mañes, Manuel Valle
Annals of Physics 324 (2009)1136

6. Existence and topological stability of Fermi points in multilayered graphene

Juan L. Manes, Francisco Guinea, Maria A.H. Vozmediano
Phys.Rev. B75 (2007) 155424

7. Portrait of the String as a Random Walk

Juan L. Mañes
JHEP 0503 (2005) 070

8. Emission Spectrum of Fundamental Strings: An Algebraic Approach

Juan L. Mañes
Nucl.Phys. B621 (2002) 37-61

9. The High-energy Behavior of Open String Scattering

David J. Gross, Juan L. Mañes
Nucl.Phys. B326 (1989) 73

10. Algebraic Study of Chiral Anomalies

Juan L. Manes, Raymond Stora, Bruno Zumino
Comm. Math. Phys. 102 (1985) 157

C.2. Research projects and grants

1. IT979-16: Grupos de Investigación del Sistema Universitario Vasco, Gobierno Vasco

Entidad/es financiadora/s: Gobierno Vasco.
Entidades participantes: UPV-EHU
Duración, desde: 1-1-2016 hasta: 31-12-21
IP: Jon Urrestilla Urizábal, UPV-EHU
Importe total del proyecto: 412.526 euros
Tipo de participación: Miembro del equipo investigador

2. FPA2015-64041-C2-1-P: Early Universe Cosmology probes to High Energy Physics and Quantum Field Theory Methods

Entidad/es financiadora/s: MINECO.
Entidades participantes: UPV-EHU y U. Salamanca
Duración, desde: 1-1-2016 hasta: 31-12-18
IP: José Juan Blanco Pillado, Ikerbasque y UPV-EHU
Importe total del proyecto: 53.361 euros
Tipo de participación: Miembro del equipo investigador

3. FPA2012-34456: Métodos no perturbativos en teoría cuántica de campos y aplicaciones.

Entidad/es financiadora/s: MICINN
Entidades participantes: UPV-EHU
Duración, desde: 1-1-2013 hasta: 31-12-15
IP: Juan Luis Mañes Palacios, UPV-EHU
Importe total del proyecto: 44.694 euros
Tipo de participación: IP

4. IT-559-10: Métodos no perturbativos en teoría cuántica de campos y aplicaciones.

Entidad/es financiadora/s: Gobierno Vasco.
Entidades participantes: UPV-EHU
Duración, desde: 22-04-10 hasta: 31-12-15
IP: Iñigo L. Egusquiza, UPV-EHU
Importe total del proyecto: 35.000 euros
Tipo de participación: Miembro del equipo investigador

5. IT-357-07: Métodos no perturbativos en teoría cuántica de campos y aplicaciones.

Entidad/es financiadora/s: Gobierno Vasco.
Entidades participantes: UPV-EHU
Duración, desde: 1-1-07 hasta: 31-12-09
IP: Manuel A. Valle Basagoiti, UPV-EHU
Importe total del proyecto: 29.220 euros
Tipo de participación: Miembro del equipo investigador

6. CDS2007-00042: Centro Nacional de Física de Partículas, Astropartículas y Nuclear.

Entidad/es financiadora/s: MEC (Cofinanciado CSIC y CIEMAT)
Entidades participantes: UPV-EHU
Duración, desde: 01-10-07 hasta: 9-12-12
IP: Antonio Pich Zardoya, IFIC
Importe total del proyecto: 11.750.000 euros
Tipo de participación: IP grupo participante UPV/EHU

7. FPA2009-10612: Métodos no perturbativos en teoría cuántica de campos y

aplicaciones.

Entidad/es financiadora/s: MEC (Cofinanciado Feder 50%)

Entidades participantes: UPV-EHU

Duración, desde: 1-1-2010 hasta: 31-12-12

IP: Juan Luis Mañes Palacios, UPV-EHU

Importe total del proyecto: 63.162 euros

Tipo de participación: IP

8. FPA2005-04823: Física no perturbativa, efectos térmicos y teorías efectivas de campos y cuerdas.

Entidad/es financiadora/s: MEC (Cofinanciado Feder 50%)

Entidades participantes: UPV-EHU

Duración, desde: 31-12-05 hasta: 31-12-08

IP: Juan Luis Mañes Palacios, UPV-EHU

Importe total del proyecto: 54.740 euros

Tipo de participación: IP

9. FPA2002-02037: Gravedad cuántica, geometría no conmutativa y efectos térmicos en teorías de campos y cuerdas.

Entidad/es financiadora/s: MCYT (Cofinanciado Feder 50%)

Entidades participantes: UPV-EHU

Duración, desde: 1-10-02 hasta: 31-12-05

IP: Juan Luis Mañes Palacios, UPV-EHU

Importe total del proyecto: 46.000 euros

Tipo de participación: IP

C.5 Invited talks (most recent)

- “Group Theory in Condensed Matter: A practical introduction”, DIPC, September 2018, 12 hour course
- “Weyl fermions from crystal symmetry”, DIPC, February 17, 2017, invited seminar
- “Anomalies in QFT and Hydrodynamics”, CERN, April 28, 2015, *Bruno Zumino Memorial 2015, Bruno Zumino Memorial*

C.6 Professional Services (most recent)

- Referee for Physical Review Letters, Physical Review B, Physical Review D, Physical Review E, Physics Letters B, NJP (IOP), Nuclear Physics B, JHEP.
- Reviewer for the National Science Foundation (NSF) in 2011 and 2013.
- Conference organizing committee for Iberian Strings 2015, Salamanca.
- Organizing committee for Taller de Altas Energías (TAE), Bilbao 2011.

C.7 Administration: Most relevant services in inverse chronological order:

- Vicedean, Faculty of Science and Technology, UPV-EHU, 2007-2010
- Physics degree coordinator, March 01- November 03
- Erasmus-Socrates coordinator for Physics, October 97- July 01
- Member of the committee for the new Physics Curriculum, April 98- January 00