

Date of the CVA	11/06/2018
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Section A. PERSONAL DATA

Name and Surname	Julio Guerrero García		
DNI	52577440S	Age	49
Researcher's identification number	Researcher ID	M-1379-2014	
	Scopus Author ID		
	ORCID	0000-0002-7118-4500	

A.1. Current professional situation

Institution	Universidad de Jaén		
Dpt. / Centre	Matemáticas / Facultad de Ciencias Experimentales		
Address			
Phone	(+34) 953 213375	Email	jguerrer@ujaen.es
Professional category	Profesor Titular de Universidad	Start date	2017
UNESCO spec. code			
Keywords			

A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
Programa Oficial de Doctorado en Astrofísica	Universidad de Granada	1995
Licenciado en Ciencias Físicas Especialidad Física Teórica	Universidad de Granada	1991

A.3. General quality indicators of scientific production

Positive evaluation of 4 research periods by CNEAI: 1992-1997, 1998-2003, 2004-2009 and 2010-2015.

Got accredited as Full Professor by ANECA in 2016.

(co-)Supervised PhDs in the last 10 years: 3

Total number of publications: 61 (50 in JCR, 12 Q1, 15 Q2, 16 Q3, 7 Q4)

Total quotations: 427 (WoS, + Google Scholar, Research Gate, etc.)

Quotations of most cited papers: 63, 35, 28, 27, 25

Average of 20 quotations/year in the last 5 years.

h-Index: 12

Contributions to International Conferences: 54

The journal J. Math. Phys. is one of the main journals in Mathematical Physics, with a high rejection rate. Despite its low impact parameter (Q2 and sometimes in Q3), its "Cited Half-Life" is greater than 10 years, demonstrating the long life of its published papers. In fact, some of my older papers in JMP are still cited now, showing the quality and long-life of these papers.

The journal J. Phys. A. is in Q1 in the area Mathematical Physics almost all years and is the first (stand out from the rest) in the Mathematical Physics section of Google Scholar.

1 article (J. Phys. A 44, 065302 (2011)) distinguished among the 50 best articles in JPA during 2011 (JPA Highlights 2011). 2 articles (J. Phys. A. 44, 445307 (2011), J. Phys. A 49, 505201 (2016)) "chosen by the editors for their novelty, significance and potential impact on future research" (IOP Select).

Most relevant contributions:

- J. MATH. PHYS. 36, 3191-3199 (1995): Study of coherent states for the relativistic harmonic oscillator.

- COMM. MATH. PHYS. 178, 399-424 (1996): Quantization of the torus as phase space with applications on the Hall Effect.

- JOURNAL OF PHYSICS A38, 6939-6953 (2005): Study of the symmetries and quantization of the Pöshl-Teller potential.

- J. Phys. A 44, 065302 (2011) and J. Phys. A. 44, 445307 (2011): The Quantum Arnold Transform is introduced and it is applied to the definition of new wave packets in the free particle.

- Appl. Comp. Harm. Analysis 21, 204-229 (2006) y Appl. Comp. Harm. Analysis. 38 - 1, pp. 32 - 49. 2015: Wavelets in the circumference and the torus are introduced, in the last case by means of modular transformations.

- Optics Letters 40, 5682-5685 (2015): Non-unitary representations of the Lorentz group (in particular Weyl spinors) are realized on optical waveguides.

- Science Bulletin 63, 244-251 (2018): Invited review article on symmetries and group-theoretical methods in Optics.

I have coauthored articles with more than 20 researchers along the world. Currently I'm collaborating with G. Marmo and C. Stornaiolo (Italy), P. Horvathy (France), D. Schuch (Germany), D. Roșca (Rumania), Oscar Rosas-Ortiz, Sara Cruz y Cruz, Blas M. Rodríguez-Lara and Héctor Moya-Cessa (México), Manuel Berrondo and Ramy El-Ganainy (USA).

Section B. SUMMARY OF THE CURRICULUM

I am member of the Institute Carlos I of Theoretical and Computational Physics, at University of Granada.

My current research interests are:

- 1) Group-theoretical methods for the quantization of non-linear systems
- 2) Coherent states, wavelets and sampling on manifolds
- 3) Group-theoretical methods and coherent states in Optics
- 4) PT-symmetry in Optics

UNESCO codes: 221200 Theoretical Physics, 1204 Geometry, 120213 Harmonic Analysis

Keywords: Mathematical Physics, Applied Maths, Harmonic Analysis, Geometry

During my career I have worked on diverse subjects. I published a couple of articles, in Condensed Matter and Genetics, previous to my PhD. I started my

PhD in Mathematical Physics, on group-theoretical methods of quantization, realizing two predoctoral stays of three months in UK and USA. I finished my PhD with 8 published papers and received the Extraordinary Doctorate Award.

I realized a postdoc stay of two years at Naples (Italy), with an Spanish grant, working on geometrical quantization methods and in gravitational lensing with G. Marmo.

I joined University of Murcia (Spain) as an Assistant Professor in Applied Maths in 1999, becoming Associate Professor in 2000. Since then I have worked in Group-theoretical methods in quantization (Non Abelian gauge theories and quantization of non-linear systems) and Harmonic analysis (coherent states and wavelets).

I'm coauthor of 61 articles in indexed journals, most included in JCR, and some in the main collection of WoS. The last ones are proceedings of conferences published in journals like "Journal of Physics: Conference Series", from IOP, with standard referee process and similar quality criteria to those of JCR.

I'm coauthor of a book chapter, "Harmonic Analysis On Groups: Sampling Theorems And Discrete Fourier Transforms", of the series Advances in Mathematics Research (Nova Science).

I have presented 39 contributions in int. conferences of annual or biannual periodicity, 32 oral and 7 posters, being the speaker in 21 of them. Two of them have been as an invited speaker.

I have speaker in 7 (non regular) int. conferences, three of them as invited speaker.

I have delivered 11 invited seminars in universities and research centers both national (5) and international (8). I have delivered invited courses in a summer school in Trieste (Italy) and in a fall school in Puebla (México).

I have co-supervised 3 PhD thesis (two of them with Mention of European doctorate). I have (co-)supervised 3 thesis for a diploma of advanced studies (DEA), 1 grade thesis, 2 master thesis and 2 end-of-degree projects.

I have been member of the organizing committee of two international conferences and of two summer schools of the Universidad Internacional del Mar (Murcia University).

I have participated in 7 national (DGICYT) and 4 regional research projects (one of them Excellence project), being IP in two of them. I have also been member of a research project in Italy (as a postdoc), and I have been member of a PESC European network.

Currently I am a member of a national research project.

I have realized an invited stay of 1 month in Naples (Italy), and short invited stays (1 to 3 weeks) in Italy, Mexico and France.

I have been referee of 15 JCR journals of medium to high impact. I'm a regular referee (more than 55 referred papers) of Journal of Physics A (one of the main journals in Mathematical Physics).

I'm reviewer of Mathematical Review (22 reviews of journals and 1 book).

Section C. MOST RELEVANT MERITS (ordered by typology)

C.1. Publications

- 1 **Scientific paper.** V. Aldaya; et al. 2016. SU(2) particle sigma model: the role of contact symmetries in global quantization Journal of Physics A: Mathematical and Theoretical. 49, pp.505201-18.
- 2 **Scientific paper.** B.M. Rodríguez-Lara; J. Guerrero. (2/2). 2015. Optical finite representation of the Lorentz group Optics Letters. 40, pp.5682-5685.
- 3 **Scientific paper.** J. Guerrero; G. Marmo; C. Stornaiolo. 2017. Symplectic scattering approach to gravitational lensing Journal of Geometry and Physics. 121, pp.206-227.
- 4 **Scientific paper.** J. D. Huerta Morales; et al. 2016. Revisiting the Optical PT-Symmetric Dimer Symmetry. 8-83, pp.1-24.
- 5 **Scientific paper.** Manuel Calixto; Julio Guerrero; Daniela Rosça. 2015. Wavelet transform on the torus: A group theoretical approach Appl. Comp. Harm. Analysis. 38-1, pp.32-49.
- 6 **Scientific paper.** GUERRERO, JULIO; LOPEZ RUIZ, FRANCISCO F.; ALDAYA, VICTOR. 2011. Harmonic states for the free particle JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL. 44, pp.445307-445323. ISSN 1751-8113.
- 7 **Scientific paper.** ALDAYA VALVERDE, V.; et al. 2011. The quantum Arnold transformation JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL. 44, pp.065302-1-065302-19. ISSN 1751-8113.
- 8 **Scientific paper.** CALIXTO, M.; GUERRERO, J.2006. Wavelet transform on the circle and the real line: A unified group-theoretical treatment APPLIED AND COMPUTATIONAL HARMONIC ANALYSIS. 21, pp.204-229. ISSN 1063-5203.
- 9 **Scientific paper.** Aldaya-Valverde, Victor; Calixto-Molina, Manuel; Guerrero-Garcia, Julio. 1996. ALGEBRAIC QUANTIZATION, GOOD OPERATORS AND FRACTIONAL QUANTUM NUMBERS Commun. Math. Phys.178-2, pp.399-424.
- 10 **Bibliographic review.** B.M. Rodríguez-Lara; Ramy El-Ganainy; Julio Guerrero. 2018. Symmetry in optics and photonics: a group theory approach Science Bulletin. 63, pp.244-251.

C.2. Participation in R&D and Innovation projects

- 1 FIS2017-84440-C2-2-P, CAMPOS CUÁNTICOS Y GRAVITACIÓN: SIMETRÍA CUÁNTICA, MECÁNICA ESTADÍSTICA Y COMBINATORIA DIRECCIÓN GENERAL DE INVESTIGACIÓN CIENTÍFICA Y TÉCNICA. Jesús Salas Martínez. (UNIVERSIDAD DE CARLOS III). 01/01/2018-31/12/2020.
- 2 FIS2014-57387-C3-3-P, GRAVITACION Y TEORIA DE CAMPOS: CUANTIZACION, SIMETRIA Y MECANICA ESTADISTICA DIRECCIÓN GENERAL DE INVESTIGACIÓN CIENTÍFICA Y TÉCNICA. Jesús Salas Martínez. (UNIVERSIDAD DE CARLOS III). 01/01/2015-31/12/2017.
- 3 Gravedad Cuántica, Cosmología y Agujeros Negros Ministerio de Ciencia e Innovación. Universidades. VÍCTOR ALDAYA VALVERDE. (Instituto de Astrofísica de Andalucía). 01/11/2012-31/12/2014. 21.000 €. Others.
- 4 08816/PI/08, FUNDAMENTOS MATEMÁTICOS DE LA MECÁNICA CUÁNTICA Y LA GRAVITACIÓN FUNDACION SENECA; JULIO GUERRERO GARCIA. (Universidad de Murcia). 01/01/2009-31/12/2013. 15.485,96 €. Co-ordinator.
- 5 03100/PI/05, MÉTODOS MATEMÁTICOS DE LA MECÁNICA CUÁNTICA Y LA GRAVITACIÓN FUNDACION SENECA; JULIO GUERRERO GARCIA. (Universidad de Murcia). 01/01/2006-31/12/2008. 20.640 €. Co-ordinator.

C.3. Participation in R&D and Innovation contracts

C.4. Patents