

Part A. Personal Information

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| DATE | 5-09-2019 |
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|--------------------------------------|--|---------------------|
| Surname(s) | González-Férez | |
| Forename | María Rosario | |
| Social Security, Passport, ID number | 52809872D | |
| Sex | Female | |
| Age | 45 | |
| Researcher codes | WoS Researcher ID (*) | A-2421-2009 |
| | SCOPUS Author ID(*) | |
| | Open Researcher and Contributor ID (ORCID) | 0000-0002-8871-116X |

(*) At least one of these is mandatory

A.1. Current position

| | | |
|---------------------------------------|---|--|
| Post/ Professional Category | Associate Professor (Profesor Titular de Universidad) | |
| UNESCO Code | 220699 (cold and ultracold atoms and molecules in fields) | |
| Key Words | Electromagnetic fields, ultracold and cold atoms and molecules, Rydberg atoms and Rydberg molecules | |
| Name of the University/Institution | Universidad de Granada | |
| | Department/Centre | Dpto Física Atómica Molecular y Nuclear & Inst Carlos I Física Teórica y Computacional |
| | Full Address | Avda. Fuentenueva SN, Granada |
| | Email Address | rogonzal@ugr.es |
| | Phone Number | 958243220 |
| Start date | 23/04/2008 | |

A.2. Education (title, institution, date)

| Year | University | Degree | Title |
|------|------------------------|--------------------------|---------|
| 1996 | Universidad de Granada | First degree | Physics |
| | | Masters (if appropriate) | |
| 2001 | Universidad de Granada | PhD | Physics |

A.3. Indicators of Quality in Scientific Production (See the instructions)

Research six-year terms of the Spanish Ministry of Science: 3 (last one 2009-2014)
 4 PhD thesis supervised (2008, 2010, 2013, 2018).
 Number of Publications: 65, 47 in the first quartile of WOS, 19 in period 2014-2019
 Sum of the Times Cited: 890 (Web of Science). Average of Citations in 2014-2018: 74
 Average Citations per Article: 14.1 (Web of Science)
 H-index: 18 (Web of Science)

Part B. Free Summary of CV (Max. of 3.500 characters, including spaces)

I am Associate Professor in the Department of Atomic Molecular and Nuclear Physics of the Universidad de Granada in Spain since 2008. My research is devoted to theoretically investigate the structure and dynamics of atoms and molecules in external fields, highlighting the theoretical interpretation of experimental results of molecules in external fields and experimental proposal for ultracold systems. My work on molecular dynamics in combined fields has shown that the mixed-field orientation of molecules is a nonadiabatic process and

we have provided the experimental conditions to reach the adiabatic limit. I have also investigated the formation of ultracold molecules, the dynamics of Rydberg atoms in an optical lattice and the structure of ultralong-range Rydberg molecules.

My scientific results have been published in over 60 peer-reviewed international journal publications, (Phys. Rev. Lett., New J. Physics, J. Chem. Phys., Phys. Chem. Chem. Phys., Phys. Rev. A); several of these works are collaborations with experimental groups. My results have been presented in many international workshops and conferences, many times as invited speakers, to highlight 39th & 47th Annual Meeting of the Division of Atomic, Molecular, and Optical Physics (DAMOP) of the American Physical Society, Optical Society of America's (OSA's) 92nd Annual Meeting, ICOLS 2013: The 21st International Conference on Laser Spectroscopy, EGAS (European Group on Atomic Systems) 2014 and Cold and Controlled Molecules and Ions Conference 2014, XXIX International Conference on Photonic, Electronic, and Atomic Collisions (ICPEAC 2015). I have supervised 4 PhD theses, 7 Master theses, 2 Bachelor Theses, and currently I am supervising 2 PhD students, and 2 master students.

I have received The Mildred Dresselhaus Award for Young Scientists 2013 from The Hamburg Centre for Ultrafast Imaging (CUI) at the University of Hamburg (Hamburg, Germany) for my contributions in the field of atomic and molecular physics, especially in the theoretical description of molecules in external fields and ultracold molecules.

Regarding academic and scientific management, I was the key person and supervisor at the University of Granada of the FP7-PEOPLE-2010-ITN COHERENCE (Cooperativity in Highly Excited Rydberg Ensembles - Control and Entanglement), and the IP of several Spanish research projects. I have been the academic coordinator of the Master in Physics and Mathematics FisMat of the Universidad de Granada from November 2012 till May 2017, and I am member of the academic commission of the doctoral program in Physics and Mathematics FisMat. I have been referee of the ANEP in the programs Ayudas Formación Posdoctoral 2013 and Ramon y Cajal 2014, and of the German Research Foundation. I am chair of the European Group of Atomic Systems EGAS Board since July 2018, and member of the Commission on Atomic, Molecular and Optical Physics (C.15) of the International Union of Pure and Applied Physics (IUPAP) for the term 2018 – 2020, and of the Atomic, Molecular and Optical Physics Division of the European Physical Society since July 2018.

Part C. Relevant accomplishments

C.1. Selected Publications in the last 5 years.

L. V. Thesing, A. Yachmenev, R. González-Férez & J. Küpper 2018, *Laser-induced alignment of weakly bound molecular aggregates*, Physical Review A **98**, 053412

N. Sandor, R. González-Férez, P.S. Julianne, & G. Pupillo 2017, *Rydberg optical Feshbach resonances in cold gases*, Physical Review A **96**, 032719

L. V. Thesing, J. Küpper & R. González-Férez 2017, *Time-dependent analysis of the mixed-field orientation of molecules without rotational symmetry*, Journal Chemical Physics **146**, 244304

A. Crubellier, R. González-Férez, C.P. Koch, E. Luc-Koenig 2017, *Controlling the s-wave scattering length with nonresonant light: Predictions of an asymptotic model*, Physical Review A **95**, 023405

J.S. Kienitz, K. Dlugolecki, S. Trippel, T. Mullins, R. González-Férez, & J. Küpper 2016, *Adiabatic Mixed-Field Orientation of Ground-State-Selected Carbonyl Sulfide Molecules*, ChemPhysChem **17**, 3740-3746

S. Trippel, T. Mullins, N.L.M. Müller, J.S. Kienitz, R. González-Férez & J. Küpper 2015, *Two-State Wave Packet for Strong Field-Free Molecular Orientation*, Physical Review Letters **114**, 103003



R. González-Férez, H.R. Sadeghpour & P. Schmelcher 2015, *Rotational hybridization, and control of alignment and orientation in triatomic ultralong-range Rydberg molecules*, New Journal Physics **17**, 013021

A. Crubellier, R. González-Férez, C.P. Koch & E. Luc-Koenig 2015, *Asymptotic model for shape resonance control of diatomics by intense non-resonant light*, New Journal of Physics **17**, 045020

M. Tomza, R. González-Férez, C.P. Koch, & R. Moszynski 2014, *Controlling magnetic Feshbach resonances in polar open-shell molecules with non-resonant light*, Physical Review Letters **112**, 113201

S. Trippel, T. Mullins, N.L.M. Müller, J.S. Kienitz, J.J. Omiste, H. Stapelfeldt, R. González-Férez, & J. Küpper 2014, *Strongly driven quantum pendulum of the carbonyl sulfide molecule*, Physical Review A **89**, 051401(R)

C.2. Research Projects and Grants

Nolinealidad, Control e Incertidumbre Cuánticas

Project FIS2017-89349-P, Ministerio de Economía y Competitividad (Spain)

PI: Dr. R. González-Férez

Duration: 2018 - 2020

Control de Sistemas Cuánticos (Control of Quantum Systems)

Project FIS2014-54497-P, Ministerio de Economía y Competitividad (Spain)

PI: Dr. R. González-Férez

Duration: 2015 – 2017

Teoría de la Aproximación, Funciones Especiales y Modelos Matemáticos: de la Teoría a las Aplicaciones Oftalmológicas

Excellence Research Project P11-FQM-7276, Junta de Andalucía (Spain)

PI: Prof. Andrei Martínez-Finkelshtein

Duration: 30/04/2013-29/04/2017

COHERENCE-Cooperativity in Highly Excited Rydberg Ensembles - Control and Entanglement

Project number 265031 FP7-PEOPLE-2010-ITN, Marie Curie Actions Initial Training Networks, European Union.

PI: Prof. Matthias Weideüller (Universität Heidelberg)

PI at the Universidad de Granada: Dr. R. González-Férez

Duration: September 1, 2011 - August 31, 2015

Física de la Información, Sistemas Ultrafríos y Nolinealidad. Aplicaciones Multidisciplinares.

Project FIS2011-24540, Ministerio de Ciencia e Innovación (Spain)

PI: Prof. J. Sánchez-Dehesa

Duration: 2012 - 2014

Moléculas ultrafrías en campos electromagnéticos externos

Project PYR-2010-16. Campus of International Excellence CEI BioTIC GENIL (CEB09-0010), Universidad de Granada.

PI: Dr. R. González-Férez

Duration: January 1, 2011 - December 31, 2011

C.3. Contracts

C.4. Patents and other IPR

C.5 PhD Students

Name: Pablo Sánchez Moreno (scholarship FPU)
Supervisors: J. S. Dehesa, R. González-Férez y R.J. Yáñez
Title: Medidas de información de funciones especiales y sistemas mecano-cuánticos, y dinámica molecular en campos eléctricos homogéneos dependientes del tiempo
Defense date: February 18, 2008

Name: Beatriz Olmos Sánchez (scholarship FPU)
Supervisors: J. S. Dehesa, R. González-Férez e I. Lesanovsky
Title: Information measures of quantum system and Collective Rydberg excitations of an atomic gas confined in a ring lattice
Defense date: March 22, 2010

Name: Juan J. Omiste Romero (scholarship FPU)
Supervisor: R. González-Férez
Title: Interaction of rotationally cold molecules with external fields
Defense date: July 15, 2013

Name: Javier Aguilera Rodriguez (scholarship EU ITN COHERENCE)
Supervisor: R. González-Férez
Title: Ultralong-range Rydberg Molecules
Defense date: January 12, 2018

C.6 Orgnization of Workshops and Conference

- Special Functions, Information Theory and Mathematical Physics. An interdisciplinary conference in honor of Prof. J. S. Dehesa's 60th birthday 17-19/9/2007, Granada
- MUARC & MPAGS Summer School on Quantum Matter: Foundations and New Trends, 18-22/9/2011, Granada
- Interdisciplinary Workshop on Nonlinear Schrödinger Equations and Applications: Modeling, Mathematical Analysis, Computation & Experiment 8-10/10/2011, Granada
- Series of Summers School on Quantum Matter 15-19/9/2013, 14-17/9/2015, 27-31/8/2017, 1-5/9/2019, Granada
- Cold and Ultracold Molecules Workshop, 4-6/11/2013, Granada
- YEA meeting and Idea Factory, 8-9/9/2014, Granada
- Ultracold Rydberg Physics Workshop, 10-12/9/2014, Granada

C.7 Scientific committee

- Member of the Scientific Panel of the conference series on Cold and Controlled Molecules and Ions.
- Member of scientific committee the final conference of the ITN COHERENCE, June 28 to July 03, 2015 Durham (UK)
- Member of the Ultracold Quantum Matter and Quantum Simulation subcommittee of the CLEO/Europe-EQEC 2017 and 2019
- Member of the European Group of Atomic Systems Board since July 2017, Chair of the board from July 2018
- Member of the Commission on Atomic, Molecular and Optical Physics (C.15) of the International Union of Pure and Applied Physics (IUPAP) for the term 2018 – 2020
- Member of Atomic, Molecular and Optical Physics Division (AMOPD) of the Eurpean Physical Society (EPS) since July 2018

C.8 Avarsd and Honnors

- Special Mention with Honors in the studies B. Sc. in Physics, Spain, 1996
- "Award for Excellence" in Ph.D. in Physics (2000-2001). University of Granada.
- Alexander von Humboldt Foundation Postdoctoral Scholarship 04/2002 to 01/2004
- The Mildred Dresselhaus Award for Young Scientists 2013 (first recipient) of The Hamburg Center for Ultrafast Imaging, Universität Hamburg, Hamburg (Germany)