

**Part A. Personal Information**

<b>DATE</b>	23/01/2019
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Surname(s)	Ruiz
Forename	David
Sex	Male
Age	42
Researcher ID	G-8791-2015
Open Researcher and Contributor ID (ORCID)	0000-0001-9837-3101

**A.1. Professional Situation Now**

Post/ Professional Category	Associate Professor	
UNESCO Code		
Key Words	Nonlinear Analysis, Elliptic Partial Differential Equations, Geometric Analysis	
	University of Granada	
	Department/Center	Departamento de Análisis Matemático, Facultad de Ciencias
	Full Address	Avda. Fuentenueva s/n, 18071 Granada
	Email Address	<a href="mailto:daruiz@ugr.es">daruiz@ugr.es</a>
	Phone Number	+34958246343
Start date	December 2007	

**A.2. Academic Preparation** (*title, institution, date*)

1999	University of Granada	Degree in Mathematics	
2002	University of Granada	PhD in Mathematicas	

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

<p>For citations we use the database Scopus.</p> <p>41 publications indexed in the JCR database (+1 accepted) and more than 1400 citations, 912 of which fall in the period 2014-18 with an average of 182 citations per year, h-index 18, 32 publications in the Q1 of JCR-2017 (+1 accepted), 13 publications in the D1 of JCR-2017 (+1 accepted).</p> <p>Three CNEAI six-year research periods (2000-2005, 2006-2011, 2012-2017). I am advisor of two docthoral theses in the last ten years plus another one, in process, see details in C.7.</p>
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**Part B. Free Summary of CV** (*Max. of 3.500 characters, including spaces*)

I am Associate Professor at the University of Granada since December 2007. Before that, during the academic year 2006-07, I held a Researcher position at the International School of Advanced Studies (Trieste, Italy), one of the most prestigious Italian research centers.

I work on Nonlinear Analysis and PDEs applied to Mathematical Physics and Geometry, more specifically:

1. Stationary Nonlinear Schrödinger equations and related models; Choquard equation, Schrödinger-Maxwell equation, etc. In this framework I am the only author of my most cited publication (J. Functional Analysis 2006), a paper with 294 citations according to Scopus.
2. Liouville type equations in 2-manifolds. These PDE's appear in Geometry and also in the Electroweak Theory and in Chern-Simons-Higgs theory. My joint work with Andrea Malchiodi (SNS Pisa) has been the subject of his Invited Sectional Lecture in the ICM 2014.
3. Overdetermined elliptic problems. A well-known conjecture of Berestycki, Caffarelli and Nirenberg on the topic was still open in dimension 2. In a couple of recent papers in collaboration with Antonio Ros and Pieralberto Sicbaldi this conjecture has been completely settled.

My most recent publications include top level journals like Comm. Pure Applied Mathematics (2013, 2017), Journal of the European Mathematical Society (2015, to appear), Advances in Mathematics (2015), Journal des Mathématiques Pures et Appliquées (2018), to name a few, see section C1 below for more.

From January 2018 I belong to the editorial board of the journal Advanced Nonlinear Studies (ranked 65/310 of the JCR 2017, Mathematics). I am also joining the editorial board of the Journal of the Korean Mathematical Society, ranked 165/310 of the JCR 2017, Mathematics.

In 2018 I have obtained the Spanish abilitation for Full Professor given by the ANECA.

I have supervised two PhD theses and I am currently the advisor of another one, in co-tutorship regime with Andrea Malchiodi (SNS Pisa). Moreover I have been the Principal Investigator of two Spanish National Projects, and I have participated in many others including some Italian National Projects.

## **Part C. Accomplishments** (*Order by typology*)

### **C.1. Most relevant publications**

1. A. Ros, D. Ruiz and P. Sicbaldi, "Solutions to overdetermined elliptic problems in nontrivial exterior domains", to appear in J. European Math. Soc. (see <https://www.ems-ph.org/journals/forthcoming.php?jrn=jems>), preprint arXiv: 1609.03739.
2. F. De Marchis, R. López-Soriano and D. Ruiz, "Compactness, existence and multiplicity for the singular mean field problem with sign-changing potentials", J. Math. Pures Appliquées 115 (2018), 237-267.
3. A. Ros, D. Ruiz and P. Sicbaldi, "A rigidity result for overdetermined elliptic problems in the plane", Comm. Pure Applied Mathematics 70 (2017), 1223-1252.
4. T. D'Aprile, A. Pistoia and D. Ruiz, "A continuum of solutions for the SU(3) Toda System exhibiting partial blow-up", Proc. London Math. Society. 111 (2015), 797-830.
5. L. Battaglia, A. Jevnikar, A. Malchiodi and D. Ruiz, "A general existence result for the Toda system on compact surfaces", Advances in Mathematics 285 (2015), 937-979.
6. A. Pomponio and D. Ruiz, "Boundary concentration of a Gauged Nonlinear Schrodinger Equation", Calculus of Variations and PDE 53 (2015), 289-316
7. A. Pomponio and D. Ruiz, "A Variational Analysis of a Gauged Nonlinear Schrödinger Equation", J. European Math. Soc. 17 (2015), 1463-1486.
8. A. Malchiodi and D. Ruiz, "A variational Analysis of the Toda System on Compact Surfaces", Comm. Pure Applied Mathematics 66 (2013), 332-371.

9. A. Malchiodi and D. Ruiz, “*New improved Moser-Trudinger inequalities and singular Liouville equations on compact surfaces*”, Geometric and Functional Analysis 21 (2011), 1196-1217.
10. D. Ruiz, “*On the Schrödinger-Poisson-Slater system: behavior of minimizers, radial and nonradial cases*”, Archive for Rational Mechanics and Analysis 198 (2010), 349-368.

## **C.2. Projects**

Title: Análisis No Lineal y Ecuaciones en Derivadas Parciales Elípticas (MTM2015-68210-P)

Funding body: Ministerio de Economía y Competitividad

Date: from January 2016 to December 2018.

Amount: 60000 euro

Principal Investigator: David Arcoya and David Ruiz Aguilar

Title: Métodos variacionales y Ecuaciones en Derivadas Parciales de la Física Matemática (MTM2011-26717)

Funding body: Ministerio de Economía y Competitividad

Date: from January 2012 to December 2014.

Amount: 11300 euro

Principal Investigator: David Ruiz Aguilar

Title: Estudio de algunos problemas para ecuaciones diferenciales ordinarias y elípticas no lineales (MTM2008-00988/MTM).

Funding body: Ministerio de Ciencia e Innovación

Date: from January 2009 to December 2011.

Amount: 34200 euro

Title: Métodos variacionales y topológicos en Análisis no-lineal y Geometría con Aplicaciones (acción integrada España-Italia, referencia HI2008.0106)

Funding body: Ministerio de Ciencia e Innovación.

Date: From January 2009 to December 2010.

Amount: 11200 euro

Title: Estudio de algunos problemas para ecuaciones diferenciales ordinarias y elípticas no lineales (MTM2008-00988/MTM)

Funding body: Ministerio de Ciencia e Innovación

Date: from January 2009 to December 2011

Amount: 34200 euro

Title: Métodos Topológicos y Variacionales en el estudio de problemas de contorno resonantes que surgen en Física e Ingeniería (MTM2005-01331).

Funding body: Ministerio de Educación y Cultura

Date: from January 2006 to December 2008

Amount: 27370 euro

Title: Análisis No Lineal y Ecuaciones Diferenciales (FQM116).

Funding body: Junta de Andalucía

Date: 1994-

Amount: 42000 euro

## **C.3. Participation in Research, Development and Innovation Contracts**

### **C.4 Patents**

### **C.5 Participation in editorial boards**

From January 2018 I belong to the editorial board of the journal Advanced Nonlinear Studies (63/309 of the JCR 2017, Mathematics). I am also joining the editorial board of the Journal of the Korean Mathematical Society, ranked 165/310 of the JCR 2017, Mathematics.

## C.6. Abilitation

In 2018 I have obtained the Spanish abilitation for Full Professor given by the ANECA.

## C.7. Supervision tasks

Advisor of the PhD Thesis of Rafael López Soriano, entitle “The mean field problem with sign-changing potentials”. This thesis was defended in the University of Granada (Spain), in 20/03/2017, and got the qualification “Sobresaliente Cum Laude”. Rafael López Soriano has won a Leibnitz fellowship at Oberwolfach last year, and then he has joined José Mazón’s group in Valencia with a Juan de la Cierva (formation) fellowship.

Coadvisor of the PhD Thesis of Isabella Ianni, entitle “Existence and Stability of Standing Waves for the Schrödinger-Poisson-Slater System” (adviser: Antonio Ambrosetti). This thesis was defended in the Scuola Internazionale Superiore di Studi Avanzati (Trieste, Italy), in 23/10/2009. Isabella Ianni is currently a Ricercatore in the Second University of Naples, Italy.

Currently advisor of the PhD thesis of Sergio Cruz, in co-tutorship regime with Andrea Malchiodi (SNS Pisa). Sergio Cruz has been awarded an INdAM-Marie Curie pre-doctoral grant.

Tutor of the Athenea3i- Marie Curie Cofund fellowship of María Medina de la Torre, from November 2018 in Granada.

Tutor of Gaetano Siciliano, from Politecnico di Bari (Italy), during the year 2008-09.

## C.8. Conferences

I have organized several conferences; in particular, I am member of the scientific committee of the upcoming “Congreso Bienal de la RSME”, Santander 2019.

I enumerate just some of my most relevant conferences from 2009 to present.

1. The ICM 2018 Satellite conference on Nonlinear Partial Differential Equations”, held in Fortaleza (Brasil), July 2018.
  2. Physical, Geometrical and Analytical Aspects of Mean Field Systems of Liouville Type”, a workshop held at the BIRS (Banff, Canada), April 2018.
  3. Asymptotic Patterns in Variational Problems: PDE and Geometric Aspects, BIRS-CMO Conference in Oaxaca (México), 2016.
  4. Workshop on Nonlinear PDE and Calculus of Variations, Chern Institute of Mathematics, Tianjin (China), 2016.
  5. Equadiff, Lyon (France), 2015.
  6. 2º Congreso de Jóvenes investigadores de la RSME, Sevilla (Spain) 2013, **plenary conference**.
  7. Variational and Topological Methods in Nonlinear Phenomena, Alghero (Italy), 2013.
  8. Singular limit problems in nonlinear PDE’s, Luminy (France), 2012.
  9. Topological and Variational Methods for PDE, Oberwolfach (Germany), 2009.
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1. Colloquium: The prescribed Gaussian curvature problem, University of Carlos III, Madrid 2015, and University of Sevilla 2017.
  2. Minicourse: Mean field equations: a variational approach, University of Pisa (Italy), 2013.

## C.9. Others

Second National Prize “Fin de Carrera” 1999.