

**Part A. Personal Information**

<b>DATE</b>	10/12/2019

Surname(s)	AMARO SORIANO	
Forename	JOSE ENRIQUE	
Social Security, Passport, ID number	24211268L	
Sex	MALE	
Age	54	
Researcher codes	WoS Researcher ID (*)	K25512012
	SCOPUS Author ID(*)	
	Open Researcher and Contributor ID (ORCID)	0000-0002-3234-9755

(\*) At least one of these is mandatory

**A.1. Current position**

Post/ Professional Category	CATEDRATICO DE UNIVERSIDAD	
UNESCO Code	220717 nuclear reactions and scattering	
Key Words	Physics, nucleus, atom, electron, neutrino, relativity, energy	
Name of the University/Institution	UNIVERSIDAD DE GRANADA	
	Department/Centre	Física Atómica Nuclear Molecular / Facultad Ciencias
	Full Address	Av. Fuentenueva Granada
	Email Address	<a href="mailto:amaro@ugr.es">amaro@ugr.es</a>
	Phone Number	958240021
Start date	2016	

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

Year	University	Degree	Title
1989	Granada	First degree	Licenciado en Ciencias Físicas
		Masters (if appropriate)	
1993		PhD	Doctor en Ciencias Físicas

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

a) total number of <b>citations 2403</b> , average number of citations during the last five years 202
b) total number of publications in the first quartile (Q1) 66    c) <b>H-index h = 28</b> d) thesis supervised: 2    e) <b>127 publications</b> in WOK.
f) Inspire-HEP (High energy physics) database indicators: 142 publications, 3111 citations, 3 very well known papers, 17 well-known papers, 51 known papers. <b>H=32</b> . Google Academic indicators: 4213 citations, <b>h=38</b> .

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

Degree in Physics, U. Granada, 1989. Degree Tesis, 1991. PhD Tesis 1993. PhD Grant F.P.I (MEC 1990—1993). Profesor Asociado 1993--1999. Profesor Titular de Universidad 1999--2016. Catedrático de Universidad (2016--). Member of Instituto Carlos I de Física Teórica y Computacional (2011--). Leader of research group FQM225 Junta de Andalucía (2011--). Secretario of Departamento de Física Atómica, Molecular y Nuclear (2009—2017). 4 sexenios (research) 1990—2013, 5 quinquenios (teaching).

**Researchlines:** theoretical nuclear physics, nucleon-nucleon interaction, intermediate energy nuclear reactions, neutrino scattering by nuclei, electron scattering by nuclei, meson exchange currents, relativistic effects, polarization observables, pion production.

Scientific and technical interests and objectives: Relativistic theory and models of nuclear reactions induced by neutrinos and electrons at intermediate energy. Two-body effects in nuclei, nuclear correlations, nucleon-nucleon interaction, meson exchange currents.

**Selected scientific and technical goals:** Contribution to the most precise determination of the nuclear force [Physical Review C 88 064002 (2013) selected by the editor]. Contribution to a global model of electron and neutrino scattering with nuclei based on the scaling properties of the nuclear response and a microscopic model of meson exchange currents [6,7,10].

**Participation in 40 research** projects (national and international). Supervisor of 2 PhD Thesis, 4 Master thesis, 1 degree thesis, and 1 Tesi di Laurea (Universidad de Pisa, Italia).

**Over 150 scientific publications** (127 in WOS). Over 100 papers in journals with referee, in particular: 5 Physical Review Letters (Q1), 1 Physics Reports (Q1), 11 Physics Letters B (Q1), 36 Physical review C (Q1), 9 Physical review D (Q1), 4 Annals of Physics (Q1), 17 Nuclear Physics A (Q2), 6 Journal of Physics G (Q2), 3 European Physical Journal A (Q2).

**Over 50 publications** in proceedings (29 are indexed in WOK, 28 are book chapters, 1 Progress in Particle and Nuclear Physics, 2 Nuclear Physics A, 2 Nuclear Physics B, 4 Few Body Systems, 2 Acta Physica Polonica B). **23 conference communications** presented by myself (15 invited talks, 3 talks, 8 posters. Plenary speaker in NuInt09).

**Research visits and stays** in international centers: Dipartimento di fisica, Universidad de Lecce, Lecce (Italia). 3 stays of one month each between 1991--1993.

Massachusetts Institute of Technology (M.I.T.), Center for theoretical Physics, Cambridge (MA). 4 stays: From 12/07 to 10/08, 1994, from 16/07 to 18/12, 1995, from 19/06 to 17/12, 1996, from 3/07 to 3/08, 1998. Institute for Nuclear Theory (I.N.T.), University of Washington, Seattle, from 27/06 to 30/07, 1997. Turin University, 17 one-week stays between 1996 and 2019, More than 20 short visits to Sevilla University

**Referee in scientific journals:** Physical Review C (30 referrals), Nuclear Physics A (5), European Physical Journal A (2), European Physical Journal plus (1), St Petersburg Polytechnic University Journal (1), Fisika B (1), Acta Physica Polonica B (1).

## **Part C. Relevant accomplishments**

### **C.1. Publications** *relevant 10 publications*

*Realistic spectral function model for charged-current quasielastic-like neutrino and antineutrino scattering cross sections on  $^{12}\text{C}$* , M.V. Ivanov, A.N. Antonov, G.D. Megias, J.A. Caballero, M.B. Barbaro, J.E. Amaro, I. Ruiz Simo, T.W. Donnelly, J.M. Udías, **Phys.Rev. C99 (2019) no.1, 014610**.

*Neutrino-Oxygen  $CC0\pi$  scattering in the SuSAv2-MEC model*  
G.D. Megias, M.B. Barbaro, J.A. Caballero, J.E. Amaro, T.W. Donnelly, I. Ruiz Simo, J.W. Van Orden, **J.Phys. G46 (2019) no.1, 015104**

*Global Superscaling Analysis of Quasielastic Electron Scattering with Relativistic Effective Mass*, J.E. Amaro, V.L. Martinez-Consentino, E. Ruiz Arriola, I. Ruiz Simo, **Phys.Rev. C98 (2018) no.2, 024627**

*Quasielastic charged-current neutrino scattering in the scaling model with relativistic effective mass*, I. Ruiz Simo, V.L. Martinez-Consentino, J.E. Amaro, E. Ruiz Arriola, **Phys.Rev. D97 (2018) no.11, 116006**

*Low energy peripheral scaling in nucleon-nucleon scattering and uncertainty quantification*, Ruiz Simo, I.; Amaro, J. E.; Ruiz Arriola, E.; R. Navarro Perez, **JOURNAL OF PHYSICS G-NUCLEAR AND PARTICLE PHYSICS 45 (2018), 035107**.

Two-nucleon emission in neutrino and electron scattering from nuclei: The modified convolution approximation. Ruiz Simo, I.; Amaro, J. E.; Barbaro, M. B.; et ál..  
ANNALS OF PHYSICS 388 (2018) 323.

Fermi-momentum dependence of relativistic effective mass below saturation from superscaling of quasielastic electron scattering, Martinez-Consentino, V. L.; Ruiz Simo, I.; Amaro, J. E.; E. Ruiz Arriola. PHYSICAL REVIEW C 96 (2017), 064612

Coarse graining the Bethe-Goldstone equation: Nucleon-nucleon high-momentum components. I. Ruiz Simo, R. Navarro Perez, J.E. Amaro, E. Ruiz Arriola.  
PHYSICAL REVIEW C 96 (2017), **054006**

*Density dependence of 2p-2h meson-exchange currents.* J.E. Amaro, M.B. Barbaro, J.A. Caballero, A. De Pace, T.W. Donnelly, G.D. Megias, I. Ruiz Simo. **Phys.Rev. C95 (2017) no.6, 065502.**

*The frozen nucleon approximation in two-particle two-hole response functions.* I. Ruiz Simo, J.E. Amaro, M.B. Barbaro, J.A. Caballero, G.D. Megias, T.W. Donnelly. **Phys.Lett. B770 (2017) 193-199.**

## **C.2. Research Projects and Grants**

1) Física hadrónica y nuclear. Ministerio de economía y competitividad. Plan Nacional I+D, FIS2014-59386P, E. Ruiz-Arriola, (Univ.Granada). 2015-2017. 84000 EUR. Researcher #2.

2) Dinámica de sistemas hadrónicos en física nuclear a energías intermedias. Ministerio de Ciencia y tecnología, Plan nacional I+D, FIS2011-24149. E. Ruiz-Arriola (UGR). 2012-2014. 127000 EUR. Researcher.

3) Dinámica relativista en dispersión de electrones y neutrinos. MINISTERIO DE CIENCIA E INNOVACIÓN. Acción complementaria INFN (Italia) Ref. AIC-D-2011-0704. Caballero-Carretero, Juan Antonio (Universidad de Sevilla). 2011-2013. 2300 EUR. Researcher

4) Dinámica relativista en dispersión de electrones y neutrinos. AIC10-D-00051. Ministerio de Ciencia e Innovación. Prog. Nac. Internacionalización I+D. Subprog. De actuaciones relativas a infraestructuras científicas internacionales. Modal. D. Caballero-Carretero, Juan Antonio (Universidad de Sevilla). 2011-2012. 3450 EUR. Researcher.

5) HadronPhysics2: study of strongly interacting matter. Comunidad Europea. Grant agreement 227431, FP7-Infrastructures-2008-1. Carlo Guaraldo (INFN Laboratori Nazionali di Frascati). 2009—2011. 9999994 EUR. Researcher.

6) Dinámica de sistemas hadrónicos en física nuclear a energías intermedias. Ministerio de Educación y Ciencia, Plan Nacional. Fis2008-01143. Ruiz-Arriola, Enrique (Universidad de Granada). 2009-2012. Researcher.

7) Dinámica de sistemas hadrónicos en física nuclear a energías intermedias. Ministerio de Educación y Ciencia, Plan Nacional. Fis2005-00810. Juan Nieves Pamplona (Universidad de Granada). 2005-2008. Lead researcher in 2008.

## **C.3. Contracts**

### **C.4. Patents and other IPR**

### **C.5. PhD Thesis Supervisor**

1) Rodrigo Navarro Pérez. Statistical error analysis of the nuclear forces. UGR. 24 february 2015. Sobresaliente. Supervisors: E. Ruiz Arriola and José Enrique Amaro Soriano.

2) Manuel Valverde Hermosilla. Interacción neutrino-núcleo a energías intermedias. UGR, 27 july 2007. Sobresaliente cum laude por unanimidad. Supervisors: J. Nieves and J.E. Amaro.

### **C.5. Talks in conferences** (selected over the few last years)

1) *Theoretical uncertainty of quasielastic neutrino cross sections from superscaling with relativistic effective mass*. Invited talk **NuInt 18 - 12th International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region**, Gran Sasso Science Institute (GSSI, L'Aquila Italy) 15-19 october 2018

2) *Fully relativistic treatment of pionic correlations and meson-exchange currents*. Invited talk at the workshop **Two-body current contributions in neutrino-nucleus scattering**. CEA Saclay, Francia. 18—22 april 2016.

3) *Inclusion of MEC in the SuSA-based calculations: status and perspectives*. Invited talk at: **NuInt14: 9th International Workshop on neutrino-nucleus interactions in the few-GeV region**. Seldsdonpark Hotel, Surrey, UK. 19—24 may 2014.

4) *SuSA-based calculations of multi-nucleon effects in scattering*. Invited talk at: **INT workshop on neutrino-nucleus interactions INT13-54W**. Institute for Nuclear Theory, Seattle, USA. 3—11 december 2013.

5) *Error analysis of nuclear matrix elements*. Talk at the **22th European Conference on few-body problems in physics EFB22**. Cracovia (Polonia). 9—13 september 2013.

6) *Meson-exchange currents in intermediate energy electron scattering*. Invited talk at the **workshop on modeling charge-changing and neutral-current neutrino reactions with nuclei**. ECT\*, Trento (Italia). 12—16 december 2011.

### **C.6. Gestion of scientific activity**

1) Head of the research group FQM225: Física Nuclear a energías intermedias. Junta de Andalucía. From february 2011.

### **C.7. Books**

**Android: Programación de dispositivos móviles a través de ejemplos segunda edición**. José Enrique Amaro Soriano. Editorial Marcombo, Barcelona, 2019. ISBN: 978-84-267-2676-6. 363 pages. Published also in Mexico, editorial Alfaomega.

**La posibilidad de viajar en el tiempo: senderos cósmicos al futuro y al pasado** (colección un paseo por el cosmos). Author: José Enrique Amaro Soriano. Editorial R.B.A. Barcelona. Publication date: 2016. ISBN: 978-84-473-8385-6. 160 pages. Translated to Italian and french. Published in Spain, Italy, France, Argentina.

**Helmholtz: la conservación de la energía. Sin fecha de caducidad** (colección Grandes Ideas de la Ciencia). Author: José Enrique Amaro Soriano. Editorial R.B.A., Barcelona 2014. ISBN: 978-84-473-7775-6. 160 pages. Translated to Italian, French and Russian. Published in Spain, Italy, France, Russia, Chile and Peru.

**El Gran Libro de Programación Avanzada con Android**. Author: José Enrique Amaro Soriano. Editorial Marcombo, Barcelona, 2012. ISBN: 978-84-267-1885-3. 400 pages. Published also in Mexico and e-book. 34 cites in Google academic.

**Android: Programación de dispositivos móviles a través de ejemplos**. Author: José Enrique Amaro Soriano. Editorial Marcombo, Barcelona, 2012. ISBN: 978-84-267-1767-2. 268 pages. Published also in Mexico and as e-book. 52 cites in Google Academic.

### **C.8. Other Publications**

**Hermann von Helmholtz. Mi clásico favorito**. Author: José Enrique Amaro Soriano. Revista Española de Física, Vol 30, No. 4 (2011)