



CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Antonio		
Family name	Suárez Fernández		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
Social Security, Passport, ID number			
e-mail	suarez@us.es	https://personal.us.es/suarez/	
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-6407-7758		

(*) Mandatory

A.1. Current position

Position	Full professor		
Initial date	05/12/2016		
Institution	University of Seville		
Department/Center	Dpto. EDAN	Faculty of Mathematics	
Country	Spain	Teleph. number	
Key words	Nonlinear partial differential equations, populations dynamics.		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
1997-2000	Associate Prof./Univ. Sevilla/Spain
2000-2016	Professor/ Univ. Sevilla/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Mathematics	Univ. of Seville/Spain	1999
Licensed	Univ. of Seville/Spain	1994

Part B. CV SUMMARY (max. 5000 characters, including spaces)

My research is in the field of nonlinear partial differential equations and their applications. From the beginning, I have focused on models with motivation in biology, ecology, medicine..., focusing on the specific ones coming from population dynamics and tumour dynamics.

Regarding the first topic, my research focuses on two variants that make the models more realistic. On the one hand, models in which diffusion (spatial movement of the species) is non-linear, i.e. it is not a random movement but depends on the density of the species itself. And on the other hand, the inclusion of non-local terms, which take into account global aspects of the species, not just local ones.

In this first area, we became the reference research group, and we had the opportunity to train several PhDs who have contributed to broadening the problems and techniques used. It is worth mentioning the relationship with Brazilian universities thanks to an international project (Special Programme for International Cooperation/PECI, financed by the CNPq) in which the main objective was to carry out research work (masters and doctorate) in disadvantaged areas of Brazil. One of these graduates, Willian Cintra, has finally obtained a tenured position at the



prestigious University of Campinas, becoming the specialist in population dynamics in Brazil, and also in the bifurcation technique.

On the second issue, tumour dynamics, we consider two problems. The first originated at the Virgen de Rocío Hospital in Seville, where a research team was interested in understanding the behaviour of a therapy aimed at preventing or interrupting the process of angiogenesis, which is fundamental for tumour growth and future metastasis. This led us into modelling in terms of chemotaxis, which is very interesting from a mathematical point of view. With the help of several research projects we have been able to advance in this line, publishing different research articles. Synergy with another research group (MOLAB, Mathematical Oncology Laboratory, group led by Prof. V. Pérez-García) allowed us to supervise a thesis focused on the growth of a very specific and aggressive tumour, glioblastoma. In this thesis we proposed indicators that indicated the degree of aggressiveness of the tumours.

The second problem also stems from an anti-tumour therapy that consisted of introducing a substance that would enhance the senescent nature of the cells, causing them to die and thus control the size of the tumour; a therapy proposed by Dr. Armando Carnero's research group at IBIS (Institute of Biomedicine of Seville).

Unfortunately, in both cases, the students we have worked with have decided not to pursue these interesting lines of research.

The techniques I have used have their origin in Functional Analysis. I have applied monotonicity techniques (sub-supersolution), bifurcation methods, topological degree, variational methods, etc.

In a transversal way to these lines of research and techniques, I have been able to supervise several young people (7 doctoral theses read and two in progress), and directed multiple TFM and TFG, being undoubtedly a way of generating knowledge and contributions to society. Of these oriented PhDs, two are full professors at the University of Seville, three at different universities in Brazil and one at the Central University of Ecuador. I have also had the opportunity to teach several specialised courses in national and international doctoral programmes.

In terms of knowledge transfer, I regularly organize and participate in national and international congresses as a speaker in conferences or communications.

I have been involved in research projects since 1997, being Principal Investigator since 2010. I have been able to collaborate with multiple national and international research groups (Universities in Great Britain and especially in Brazil), and I have also had scientific responsibilities beyond being responsible for research projects, since for more than six years I was Coordinator of the PhD Programme in Mathematics at the University of Seville. Currently, I am Director of the Dept. of Differential Equations and Numerical Analysis.

Some data as a summary:

Six-year research: 4 (last in December 2020)
Number of PhD supervised in the last 5 years: 5
Number of PhD in progress: 3
Publications: 109
Citations: 1016
Publications in Q1: 53
h-Index: 17.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications (*see instructions*)



1. B. B. V. Maia, M. Molina-Becerra, C. Morales-Rodrigo, A. Suárez, (2024), Generalized eigenvalue problem for an interface elliptic equation, *J. Differential Equations*, 390, 494-524
2. J. López-Gómez, V.K. Ramos, C. A. Santos, A. Suárez, (2024), Point-wise behavior of the explosive positive solutions to a degenerate elliptic BVP with an indefinite weight function, *J. Differential Equations*, 403, 67-86.
3. B. B. Maia, M. Molina-Becerra, C. Morales-Rodrigo, A. Suárez, (2024), Generalized eigenvalue problem for an interface elliptic equation, *J. Differential Equations*, 390, 494-524.
4. F. Guillén-González, E. Sevillano-Castellano, A. Suárez, (2023), Fitting parameters and therapies of ODE tumor models with senescence and immune system. *J. Math. Biol.* 87, no.5, Paper No. 67, 28pp.
5. B. B. Maia, C. Morales-Rodrigo, A. Suárez, (2023), Some asymmetric semilinear elliptic interface problems. *J. Math. Anal. Appl.* 526, no. 1, Paper No. 127212 25 pp.
6. W. Cintra, M. Molina-Becerra, A. Suárez, (2022), The Lotka-Volterra models with non-local reaction terms. *Commun. Pure Appl. Anal.* 21, no. 11, 3865-3886.
7. M. Delgado, J. R. Santos Junior, A. Suárez, (2022), An intermediate local-nonlocal eigenvalue elliptic problem, *Commun. Contemp. Math.*, Paper No. 2050076, 21p.
8. M. Delgado, M. Molina-Becerra, A. Suárez, (2021), A logistic type equation in \mathbb{R}^N with a nonlocal reaction term via bifurcation method, *J. Math. Anal. Appl.*, 493: Paper No. 124532, 19.pp
9. M. Delgado, C. Morales-Rodrigo, J. R. Santos Junior, A. Suárez, (2020), Non-local degenerate diffusion coefficients break down the components of positive solutions, *Adv. Nonlinear Stud.*, 20:19-30.
10. T. S. Figueiredo de Sousa, C. Morales-Rodrigo, A. Suárez, (2020), Some superlinear problems with nonlocal diffusion coefficient, *J. Math. Anal. Appl.*, 482: 123519, 25.pp
11. M. Delgado, I. B. M. Duarte, A. Suárez, (2019), Nonlocal singular elliptic system arising from the amoeba-bacteria population dynamics, *Commun. Contemp. Math.*, 21:1850051, 19.pp
12. M. Delgado, M. Molina-Becerra, J.R. Santos Junior, A. Suárez, (2019), A non-local perturbation of the logistic equation in \mathbb{R}^N , *Nonlinear Analysis*, 187: 147-158.
13. W. Cintra, C. Morales-Rodrigo, A. Suárez, (2018), Coexistence states in a cross-diffusion system of a predator-prey model with predator satiation term, *Math. Models Methods Appl. Sci.*, 28: 2131-2159.

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

1. Invited conference, A. Suárez, UFCG's Webinar On Non-linear Elliptic PDE's (Programa de Verao 2024, UAMat/UFCG), February 2024, Campina Grande, Brasil
2. Invited conference, A. Suárez, Workshop Nonlinear Partial Differential Equations, 28 October 2022, Madrid, (Univ. Carlos III).
3. Oral presentation, M. Delgado, Ítalo B. M. Duarte, Antonio Suárez, XXVII CEDYA/XVII CMA, 18-22 July 2022, Zaragoza (Spain).
4. Invited conference, A. Suárez, XIV Summer Workshop in Mathematics Mat / UnB, 17-20 January 2022, Brasilia (Brazil, on-line).
5. Invited conference, A. Suárez, International Workshop on Differential Equations and Infinite-dimensional dynamical system, Celebrating the 60th birthday of Alexandre N. de Carvalho, 8-9 October 2021, Seville, Spain.
6. Invited conference, A. Suárez, Jornada de Ecuaciones en Derivadas Parciales, 50 cumpleaños del Prof. José Carmona, 10-12 September 2021, Almería, Spain.



7. Invited conference, A. Suárez, ICMC Summer Meeting on Differential Equations 2021, 1-3 February 2021, Sao-Carlos, Brazil, on-line.
8. Invited conference, A. Suárez, II IMDE: Conference Amazon-Andalusia on PDEs, 10-13 June 2019, Belem, Brazil.
9. Invited conference, A. Suárez, XI Summer Workshop in Mathematics, 18-22 February 2019, Brasilia, Brazil.

C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

1. Reference: PID2023-149509NB-IOO
Title: Modelos de EDPs de dinámica de poblaciones combinando efectos locales y no locales.
Main researchers: Antonio Suárez
Financial Institution: Ministerio de Ciencia, Innovación y Universidades
Duration of the contract: 01/09/2024-31/08/2028
Participation: Main Research
2. Reference: US-1381261
Title: Diferentes perspectivas para modelos biomatemáticos: modelización, análisis y aproximación
Main researchers: Antonio Suárez and M. A. Rodríguez-Bellido (Univ. de Sevilla)
Financial Institution: Junta de Andalucía (Cons. Economía, Conocimiento, Empresas y Universidad)
Duration of the contract: 01/01/2021-31/05/2023
Financing: 80,000 EUROS
Participation: Main Research
3. Reference: PGC2018-098308-B-I00
Title: Modelos biológicos de EDPs con quimiotaxis y términos no locales
Main researchers: Antonio Suárez y Francisco Guillén González (Univ. de Sevilla)
Financial Institution: Ministerio de Ciencia, Innovación y Universidades
Duration of the contract: 01/01/2019-31/12/2022
Participation: Main Research
4. Reference: MTM2015-69875-P
Title: Problemas de Difusión, Reacción y Campo de Fases Aplicados a Modelos de Organismos Vivos
Main researchers: Antonio Suárez and Francisco Guillén González (Univ. de Sevilla)
Financial Institution: Ministerio de Economía y Competitividad.
Duration of the contract: 01/01/2016-31/12/2018
Financing: 68,000 EUROS
Participation: Main Research
5. Reference: ISCH COST Action IS1104
Title: The EU in the new complex geography of economic systems: models, tools and policy evaluation
Main researcher: Pasquale Commendatore (Università di Napoli 'Federico II', Italia)
Financial Institution: CEE.
Duration of the contract: 30/11/2011-21/03/2016
Participation: Research
6. Reference: CNPQ-Proc. 400426/2013-7
Title: Programa Especial de Cooperación Internacional/PECI
Main researchers: Giovany Figueiredo and Antonio Suárez
Financial Institution: CNPQ, Brasil.
Duration of the contract: 01/10/2013-30/09/2016
Participation: Main Research
7. Reference: MTM2012-31304



Title: Sistemas de Edps con Difusión Cruzada. Aplicaciones a Terapias y Determinación de Parámetros.

Main researcher: Antonio Suárez (Univ. de Sevilla)

Financial Institution: Ministerio de Economía y Competitividad.

Duration of the contract: 01/02/2013-31/01/2016

Participation: Main Research

8. Reference: MTM2014-61312-EXP

Title: Dinámica Fractal de la Consciencia: de la Teoría a la Implementación Clínica

Main researcher: J. Antonio Langa Rosado (Univ. de Sevilla)

Financial Institution: Ministerio de Economía y Competitividad.

Duration of the contract: 01/09/2015-31/08/2017

Participation: Research

C.4. Contracts, technological or transfer merits, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

Reference: 2367/0750

Title: Bienestar Inmigrante y Justicia Social en Andalucía: Generación de un sistema dinámico multinivel.

Main research: Virginia Paloma Castro (Univ. de Sevilla)

Financial Institution: Fundación Centro de Estudios Andaluces.

Duration of the contract: 15/11/2014-20/08/2016

Participation: Research