MINISTERIO
DE ECONOMÍA, INDUSTRIA
Y COMPETITIVIDAD

CURRICULUM VITAE (maximum 4 pages)

Part A. PERSONAL INFORMATION

CV date	20/12/2022

First and Family name	LUIS NARVÁEZ MACARRO		
Social Security, Passport, ID number	[redacted]	[redacted]	[redacted]
Researcher numbers	Researcher ID	A-8260-2015	
	Author ID		
	ORCID code	0000-0003-4316-5019	

A.1. Current position

Name of University/Institution	Universidad de Sevilla		
Department	Departamento de Algebra & Instituto de Matemáticas (IMUS)		
Address and Country	AVDA. REINA MERCEDES s/n 41012 SEVILLA		
[redacted]	[redacted]	[redacted]	[redacted]
Current position	Full Professor	From	06/1993
UNESCO code	1204 - 1201		
Key words	D-MODULES, BERNSTEIN-SATO POLYNOMIALS, DE RHAM COHOMOLOGY, HASSE-SCHMIDT DERIVATIONS, LOGARITHMIC DE RHAM COMPLEX, PERVERSE SHEAVES		

A.2. Education

Degree/PhD	University	Year
LIC. MATEMÁTICAS	UNIVERSIDAD DE SEVILLA	1979
DR. EN MATEMÁTICAS	UNIVERSIDAD PARIS 7	1984

A.3. JCR articles, h Index, thesis supervised...

NUMBER OF "SEXENIOS": 6 (1980-85; 1986-1991; 1992-97; 1998-2003; 2004-2009; 2010-2019)
THESES SUPERVISED IN THE LAST 10 YEARS: 2 (2014 & 2019)
CITES: 292 (MATHSCINET), 270 (WEB OF SCIENCE), 730 (Scholar Google)
PUBLICATIONS IN Q1: 20
H INDEX: MATHSCINET: 9; WEB OF SCIENCE: 9; SCHOLAR GOOGLE: 16.

Part B. CV SUMMARY *(max. 3500 characters, including spaces)*

I defended my Thesis in 1984 in the Univ. of Paris 7 under the supervision of Lê Dung Tráng on the description of perverse sheaves stratified with respect to irreducible plane curves. In 1985-1995 I worked with Z. Mebkhout on several topics of D-module theory: a geometric proof of Kashiwara's constructibility theorem; an algebraic proof of the existence of the b-functions on a general class of algebras; the continuity of the division of differential operators; the theory of D-dagger modules and p-adic cohomology (a paper on this topic was published on 2010). In 1994, F. Castro, D. Mond and L. Narváez proved the "logarithmic comparison theorem" for locally quasi-homogeneous free divisors. This was the starting point for a fruitful research line. In 1996 I supervised the Ph.D. Thesis of F. J. Calderón, where he applied D-module techniques for studying logarithmic de Rham complexes w.r.t. free divisors. This thesis, joint with the results of Castro-Mond-Narváez, originated an important set of papers in France, Germany, Japan, Spain, UK and USA along more than 20 years. Among them there are 1 paper by Calderón in 1999, 6 papers by Calderón-Narváez in the period 2002-2009 and 1 paper by Calderón-Castro-Mond-Narváez in 2002. Recently I proved the symmetry of the roots of Bernstein-Sato polynomial with respect to free divisors with linear Jacobian ideal (2015) and several extensions are in progress. These results are being continued in a project with C. Sevenheck and A. Castaño, on which a paper in AiM (2019) has been published, and a preprint appeared in 2019.

In 2001 I supervised the Ph.D. Thesis of F. Gudiel on the description of perverse sheaves on general stratified spaces, whose results were published in 2 articles by Gudiel-Narváez (2003, 2008). In 2002 I supervised the Ph.D. Thesis of M. Fernández Lebrón on the theory of Hasse-Schmidt derivations and their results were published in 3 papers by Fernández Lebrón-Narváez (2003, 2005). In 2007 I co-supervised (with V. Navarro, Barcelona) the Ph.D. thesis of B. Rodríguez González on simplicial descent categories. Their results have been published in 2 papers by B. Rodríguez González (2012, 2014). In 2014 I co-supervised (with A. Rojas) the Ph.D. thesis of A. Castaño on Algebraic D-Modules and Cohomology of Dwork Families. Their results are contained in 3 papers.

Since 2008 I am developing the theory of Hasse-Schmidt derivations as a substitute of usual derivations in non-zero characteristics. I am interested in producing invariants of singularities in positive or unequal characteristic through the modules of integrable derivations. I have published 6 papers on this topic (2009, 2012, 2018, 2020) and 1 preprint (ArXiv, 2019). I have lectured on the topic in Maringá (Brasil, 2014), Universidad Autónoma de Madrid (2016) and Universidad de Córdoba (Argentina, 2017). I talked in several meetings: Tenerife (2008), Oaxaca (2009), St. Petersburg (2010), Ávila, Tordesillas (2011), Guanajuato (2015), Fortaleza (2015), Angers, Lisboa, Rennes (2016), Sevilla, Valladolid, Buenos Aires (2017), Chemnitz (2018). The Ph.D. thesis of M.P. Tirado was defended in May 2019 and dealt with the computation and the behavior of the modules of m-integrable derivations in characteristic p>0 (it has produced 3 papers, one published on JPAA and one in AiM).

In the period 1999-2007 I was involved in the creation of the Institute of Mathematics of the University of Sevilla (IMUS), and during the period 2007-15 I was its first Director. I also served the RSME as a council member (2002-08) and member of the Scientific Committee and responsible of scientific events (2006-13). I'm currently the President of its International Relations Comission, and I have elected as a member-at-large of the EC of EMS.

Part C. RELEVANT MERITS

C.1. Publications (a selection since 2010)

(with Ch. Chiu) Higher derivations of modules and the Hasse-Schmidt module. Michigan Math. J. Advance Publication 1-15 (2022). (First Online: 29 April 2022)

Hasse--Schmidt modules versus integrable connections, Rev. Mat. Complut., (2019) (First Online: 16 December 2019)

Hasse--Schmidt derivations versus classical derivations. Contemporary Mathematics, vol. 742, Amer. Math. Soc., Providence, RI, 2020, pp. 157-179

(with M. Gros and J. Sebag) Arc scheme and Bernstein operators. Arc Schemes and Singularities, 279-295. Word Scientific, 2020.

Rings of differential operators as enveloping algebras of Hasse--Schmidt derivations, J. Pure Appl. Algebra, 224 (1) (2020), 320-361.

(with C. Sevenheck) Tautological systems and free divisors, Adv. Math. 352 (2019), 372-405.

Hasse-Schmidt derivations: the action of substitution maps. In "Singularities, algebraic geometry, commutative algebra, and related topics. Festschrift for Antonio Campillo on the occasion of his 65th birthday" pp. 115-158, Springer, 2018.

A duality approach to the symmetry of Bernstein-Sato polynomials of free divisors. Adv. Math. 281 (2015), 1242-1273.

On the modules of m-integrable derivations in non-zero characteristic. Adv. Math. 229 (5) (2012), 2712-2740.

(with Z. Mebkhout) Le théorème du symbol total d'un opérateur différentiel p-adique. Rev. Mat. Iberoamericana 26 (3) (2010), 825-859.

C.2. Research projects and grants (last six)

PID2020-114613GB-I00: Geometría Aritmética, D-módulos y Singularidades. IP: A. Rojas León & L. Narváez Macarro. Periodo de ejecución: 01.09.2021 – 31.08.2025.

MTM2016-75027-P: Geometría Aritmética, D-Módulos y Singularidades. Plan Estatal I+D+I, Convocatoria 2016. IP: A. Rojas León & L. Narváez Macarro. Periodo de ejecución: 30.12.2016 – 29.12.2020. Cuantía: 82.700 euros.

P12-FQM-2696: Singularidades, Geometría Algebraica Aritmética y Teoría de Representaciones: Estructuras y Métodos Diferenciales, Cohomológicos, Combinatorios y Computacionales. Proyectos de Excelencia de la Junta de Andalucía, 2012. IP: L. Narváez Macarro. Periodo de ejecución: 30.01.2014 - 29.01.2018. Cuantía: 116.494,00 euros.

MTM2013-46231-P: Geometría Algebraica y Geometría Aritmética; Métodos diferenciales, Singularidades, Cohomología y Curvas Elípticas. Plan Estatal I+D+I, Convocatoria 2013. IP: A. Rojas León & L. Narváez Macarro. Periodo de ejecución: 01.01.2014 – 31.12.2016. Cuantía: 81.025 euros.

MTM2010-19298: Anillos de operadores diferenciales, Singularidades y Geometría Algebraica Aritmética. Plan Estatal I+D+I, Convocatoria 2010. IP: L. Narváez Macarro. Periodo de ejecución: 01.01.2011 – 31.12.2014. Cuantía: 101.277 euros.

MTM2007-66929: D-Módulos, Singularidades y Geometría Algebraica Aritmética. Plan Estatal I+D+I, Convocatoria 2007. IP: L. Narváez Macarro. Periodo de ejecución: 01.10.2007 – 30.09.2010. Cuantía: 118.580 euros.

C.5 Invited talks (since 2016)

On quasi free structures, Fifth International Workshop on Zeta Functions in Algebra and Geometry, Nice, France, 2-6 May 2022.

On Hasse-Schmidt derivations in nonzero characteristic, Singularities in Positive Characteristic, CIRM, Luminy, 12-16 July, 2021.

An attempt to make explicit the Riemann-Hilbert correspondence in rank 2 with singularities along x^p – yq^ = 0, Rigid Local Systems, FCUL, Lisbon, 28 January-1 February 2019

Rings of differential operators as enveloping algebras of Hasse-Schmidt derivations in arbitrary characteristics, Singularities, Toric Geometry and Differential Equations, Technische Universität Chemnitz, Germany, March 19-23, 2018.

Sobre la estructura algebraica de las derivaciones de Hasse—Schmidt, Sesión ``Geometría Algebraica y Teoría de Números", Primer Encuentro Conjunto de la RSME y la UMA, Universidad de Buenos Aires, December 11-15, 2017.

New insights on Hasse-Schmidt derivations, Colloquium 2017 Celebrating Contributions of Antonio Campillo to Mathematics, IMUVA, Valladolid, June 23, 2017.

Hasse-Schmidt derivations and differentials operators in any characteristic, A Panorama on Singular Varieties: A conference to celebrate 70th Birthday of Lê Dung Tráng, IMUS, Sevilla, 7-10 February, 2017.

Around the symmetry of the roots of Bernstein-Sato polynomials, D-modules and Hodge theory, Kavli IPMU, University of Tokyo, 21-27 January, 2017.

Hasse-Schmidt derivations: an interesting notion to play with in non-zero characteristics, Arc schemes and singularity theory, Rennes, France, 21-25 November, 2016.

A look at rings of differential operators through Hasse-Schmidt derivations, Iberian Meeting on Algebraic Analysis, Lisbon, Portugal, 8-10 June, 2016.

On the right D-module structure on the top differential forms through Hasse-Schmidt derivations, D-modules and Singularities in honor of Michel Granger, Angers, Francia, 2-3 May, 2016.

C.6 Organization of scientific activities (since 2015)

VIII International Summer School of Mathematics, Sevilla (co-organizer), 14-28 July 2019.

Arcs, differential algebraic geometry and singularities, IMUS, Sevilla (co-organizer), 11-14 September 2018.

Primer Encuentro Conjunto RSME--UMA, Buenos Aires, Argentina (Scientific Committee) 11 - 15 September 2017.

Meeting on D-modules and Singularities, IMUS, Sevilla (co-organizer), 6-8 September 2017.

Session ``Singularities", Fourth Joint Meeting of Royal Spanish and Mexican Mathematical Societies, Valladolid, Spain (Co-organizer), 19 - 22 June 2017.

A Panorama on Singular Varieties: A conference to celebrate 70th Birthday of Lê Dung Tráng, IMUS, Sevilla (co-organizer), 7 - 10 February 2017.

Primer Encuentro de la Red de Geometría Algebraica y Singularidades (Scientific Committee), 27 - 29 January 2016.

III Encuentro Special session "Differential methods in Algebra and Algebraic Geometry", First joint meeting SBM-SBMAC-RSME, Fortaleza, Brazil, December 7-10, 2015.

D-modules and singularities, Padova, Italy, September 14-16, 2015.

Honors

Member of the Institute for Advanced Study, Princeton, from September 1997 to July 1998.

Académico Numerario de la Real Academia Sevillana de Ciencias, since 2000.

Perfil en ArbolMat, February 2017 (https://www.arbolmat.com)

Medalla de la RSME, October 2022