

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	Enrique		
Family name	Macías Virgós		
Gender (*)	Male	Birth date (dd/mm/yyyy)	1956
Social Security, Passport, ID number	36****89 S		
e-mail	quique.macias@usc.es	URL Web	http://xtsunxet.usc.es/macias/usc
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-1763-1610		

(*) *Mandatory*

A.1. Current position

Position	<i>Catedrático de Universidad / Full professor</i>		
Initial date	11/8/2020		
Institution	Universidade de Santiago de Compostela		
Department/Center	<i>Departamento de Matemáticas</i>	<i>Facultad de Matemáticas</i>	
Country	Spain	Teleph. number	+34 881813153
Key words	Foliations; Lie groups; Diffeological spaces; LS-category; Quaternionic linear algebra; Morse theory; Simplicial complexes and finite spaces; Topological complexity		

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

Period	Position/Institution/Country/Interruption cause
01/10/1979– 30/09/1983	Profesor encargado de curso, nivel D (Lecturer). Univ. Santiago de Compostela, C.U. Lugo.
01/10/1983– 27/11/1986	Profesor adjunto contratado, dedic. exclusiva (Assistant Professor). Univ. Santiago de Compostela, C.U. Lugo.
01/10/1986– 31/07/1987	Becario post-doctoral FPI, Programa MEC-MRT (Post-doc FPI Fellowship). Univ. Lille–Flandres–Artois (France).
28/11/1986– 23/03/1988	Profesor Titular de Universidad, tiempo completo (Associate Professor). Univ. Santiago de Compostela, C.U. Lugo.
24/03/1988– 10/08/2020	Profesor Titular de Universidad, tiempo completo (Associate Professor). Univ. Santiago de Compostela, Facultad de Matemáticas.
16/11/2016– 16/12/2016.	Professeur invité Université de Lille 1 (Francia). CEMPI. Laboratorio Paul Painlevé UMR-CNRS 8524.

(Include all the necessary rows)

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licenciado en Matemáticas, con grado (B.Sc.)	Univ. Santiago de Compostela	29/06/1979
Doctor en Matemáticas (Ph.D.)	Univ. Santiago de Compostela	19/09/1983

(Include all the necessary rows)

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

Specialist in Topology, I am interested in Algebraic Topology, including foliation theory, Morse theory, and Lie groups.

I obtained my Ph.D. in 1983 with a dissertation on the algebraic topology of foliations, supervised by X. Masa. In 1986–87 I held an FPI postdoctoral fellowship at the University of Lille (France), and since then I worked regularly with G. Hector (later at the Université Claude Bernard in Lyon). Motivated by problems in foliation theory, I became interested in diffeological

spaces, together with my students E. Sanmartín and A. Sotelo. Around 1998 I began working on Lusternik–Schnirelmann category as a result of my contact with D. Tanré’s algebraic topology group in Lille. Together with my Ph.D. student H. Colman, we developed a new version of LS category adapted to foliations, which had a significant impact and inspired articles by S. Hurder, P. Walczak, E. Vogt, W. Singhof, H. Colman, and C. Meniño.

I am also interested in computing the LS category of Lie groups and homogeneous spaces. This led me to study quaternionic linear algebra with my student M. J. Pereira. Since LS category is related to the number of critical points of a differentiable function, we obtained results in Morse theory for symmetric spaces and Stiefel manifolds. I have published with D. Tanré and J. P. Doeraene (Lille), J. Oprea (Cleveland), and J. Strom (Michigan).

In recent years I have published jointly with J. A. Vilches and D. Fernández-Ternero (Sevilla), E. Minuz (Aarhus), N. Scoville (Ursinus), and J. M. García-Calzines (La Laguna). We have extended the notions of LS category and topological complexity to simplicial complexes and finite topological spaces. Our work has been cited by authors such as K. Tanaka and J. González. I am currently working with my former Ph.D. student D. Mosquera on these topics and on discrete Morse theory. Our notion of homotopic distance has been the subject of several publications by A. Borat, T. Vergili, and others.

Since 2000 I have been principal investigator of several projects funded by the Spanish Ministry and the Xunta de Galicia. I am currently part of a research group at the University of Santiago de Compostela, together with A. Gómez Tato, E. G. Río, and J. A. Álvarez-López, among others, and for several years I have also been a member of a topology project with A. Murillo and A. Viruel at the University of Málaga. I have organized various national and international scientific activities and have attended around eighty conferences.

I have been working at USC since 1979, and I have been Full Professor in the area of Geometry and Topology since 2020. My teaching experience covers all university levels, from undergraduate to master’s and doctoral programs. I am also a tutor for UNED.

I am also active in mathematics outreach and dissemination, with several publications and nearly one hundred talks delivered in recent years.

Leadership Experience

My institutional responsibilities include having served as Dean of the Faculty of Mathematics (1994–2001) and Chair of the Department of Geometry and Topology (2011–2016) and of the Department of Mathematics (2016–2020), as well as member of numerous committees.

I have participated in various activities of the Spanish Royal Mathematical Society (RSME), where I was a member of its Governing Board (2000–2006) and later Vice President (2007). As a member of the Electronic Publications Committee of the European Mathematical Society (EMS), I was involved in European projects such as LIMES and EuDML, related to the creation of databases of mathematical literature.

In 2010 I was the scientific coordinator of the Spanish Topology Network and later a member of its Scientific Committee.

General Indicators of Research Quality

- Number of six-year research periods (sexenios): 5
- h-index: Web of Science: 6; MathSciNet: 7; Google Scholar: 12; Scopus: 6
- Number of Ph.D. theses supervised in the last ten years: 3 (plus 2 currently in progress)
- Total citations: MathSciNet: 143; Google Scholar: 519; Web of Science: 118; Scopus: 114
- Average number of citations per year (last 5 years): Web of Science: 4.33
- Total publications in the first quartile (Q1 JCR in the year of publication): **10**:

Mediterr. J. Math. (2024), *Math.* (2023), *AIMS Math.* (2022), *Linear Multilinear Algebra* (2022), *Rev. R. Acad. Cienc. Exactas Fís. Nat. Ser. A Mat.* (2020), *Publ. Mat.* (2019), *Linear Multilinear Algebra* (2014), *Proc. Cambridge Philos. Soc.* (2013), *Linear Algebra Appl.* (2010), *Electron. J. Linear Algebra* (2009), *Topology* (2001), *J. London Math. Soc.* (2000), *Trans. Amer. Math. Soc.* (1994).

Periods of research activity, accreditations and awards

- 13 three-year seniority periods
- 5 research productivity periods (“sexenios”):
 1. 1989–1994 (level 27)
 2. 1998–2003 (level 27)
 3. 2005–2010 (level 27)
 4. 2011–2016 (level 27)
 5. 2017–2022 (level 28)
- 6 five-year teaching periods
- 10 merit-based recognition periods for curricular excellence in teaching and research, ACSUG, Xunta de Galicia (2017)
- 8 merit-based recognition periods for administrative and management duties
- National accreditation as Full Professor, 17/04/2012
- “Gaceta Matemática” Award, CSIC–RSME, 1974
- Teaching Innovation Award 2006–2007
- “Galipedia” Award 2025, SNL-USC

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions)

In the last ten years I have published more than 25 research articles in reputable international journals, including several in Q1 JCR journals; in this CVA I include the **ten** most relevant ones.

- Enrique Macías-Virgós, Reihaneh Mehrabi, Relative De Rham cohomology in diffeological spaces, accepted in *Homol. Homotopy Appl.* (2025).
- D. Fernández-Ternero, E. Macías-Virgós, D. Mosquera-Lois, J.A. Vilches, Morse-Bott theory on posets and a homological Lusternik-Schnirelmann theorem, *Journal of Topology and Analysis*, Volume No. **16**, Issue No. 03, pp. 323 – 346 (2024).
- E. Macías-Virgós, M.J. Pereira-Sáez, A.D. Tarrío, Rayleigh quotient and left eigenvalues of quaternionic matrices, *Linear and multilinear algebra*, 1-24 (2022).
- Enrique Macías-Virgós, David Mosquera-Lois, Homotopic distance between maps, *Math. Proceedings Cambridge Phil. Soc.* 172, No. 1, 73-93 (2022).
- D. Fernández-Ternero, J.M. García-Calcines, E. Macías-Virgós, J.A. Vilches, Simplicial fibrations, *Rev. R. Acad. Cienc. Exactas Fis. Nat. Ser. A Mat. RACSAM*, **115**-2 (2020).
- E. Macías-Virgós; M.J. Pereira-Sáez; D. Tanré, Non-linear Morse-Bott functions on quaternionic Stiefel manifolds, *Indag. Mathematicae* **31**(6), 968-983 (2020).
- E. Macías-Virgós; P.L. Martín, Non-unimodular transversely homogeneous foliations, *Ann. Inst. Fourier* **71**, No. 2, 849-887 (2021).
- D. Fernández-Ternero, E. Macías-Virgós, N. Scoville, J. A. Vilches, Strong discrete Morse theory and simplicial LS-category: A discrete version of the Lusternik-Schnirelmann Theorem, *Discrete and Computational Geometry* **63**, 607-623 (2020).
- E. Macías-Virgós; M. J. Pereira-Sáez; D. Tanré, Relative Singular Value Decomposition and applications to LS-category, *Linear Algebra Appl.* **582**, 58-75 (2019).
- D. Fernández-Ternero, Enrique Macías-Virgós, E. Minuz, J. A. Vilches Simplicial Lusternik. Schnirelmann category, *Publicacions Matemàtiques* **63** (1), 265-293 (2019).

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

- ECM 2024 European Congress of Mathematics*. Mini-Symposium MS-21 — Applied and Combinatorial Topology. Organizing Committee, Seville, July 15–19, 2024.
- XX Meeting on Computational Geometry*, Santiago de Compostela, July 3–5, 2023. Co-chair, Organizing Committee.
- XXVI Spanish Topology Meeting (RET)*, Santiago de Compostela, October 18–19, 2019. Organizing Committee.
- RET: New Trends on Foliated and Stratified Spaces: Topology, Geometry and Analysis*, Santiago de Compostela, June 18–19, 2018. Organizing Committee.
- RET Thematic Interdisciplinary Workshop of the Spanish Topology Network: “Topology and Combinatorics”*, Santiago de Compostela, November 11–12, 2016. Organizing Committee.

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

- Morse theory, topology, analysis and dynamics*, PID2020-114474GB-I00, MICINN – State Research Agency. PIs: J. Álvarez-López, E. Macías-Virgós. Period: 01/01/2021 – 31/07/2025. Budget: €50,820.
- Competitive Reference Group, Consolidation 2023*, ED431C 2023/31 GiMAT, Galician University Funding Plan 2022–2026, Univ. Santiago de Compostela, 2023–2026. PI: Antonio Gómez Tato. Budget: €280,000.
- GiMAT Project, Galician Plan for R&D*, IDT2019-PG038, University of Santiago de Compostela. Period: 01/01/2019 – 31/12/2022. PI: Eduardo García Río. Budget: €190,000.
- Higher structures in Differential Geometry and Homotopy Theory*, MINECO MTM2016-78647-P. Univ. Málaga and partners. Period: 01/01/2017 – 31/12/2020. PIs: Aniceto Murillo / Antonio Viruel. Budget: €158,000.
- Invariants associated to topological and differentiable structures*, MINECO MTM2013-41768-P. Univ. Málaga and partners. Period: 01/01/2014 – 31/12/2016 (extended to 31/12/2017). PIs: Aniceto Murillo / Antonio Viruel.
- Support for the structuring of competitive research units*, Xunta de Galicia GPC2015/006, Univ. Santiago de Compostela. Period: 01/01/2015 – 30/11/2017. PI: Xosé Masa.

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.

- European Digital Mathematics Library (EuDML)
EU Competitiveness and Innovation Framework Programme (CIP-ICT-PSP)
 - Duration: from 01/02/2010 to 31/01/2013
 - Principal Investigator: Head of the Spanish node (USC) and WP2: Enrique Macías Virgós
 - Amount: 39,625.00 euros
- Large Infrastructures in Mathematics-Enhanced Services (LIMES)
EU Fifth Framework Programme (HP-RI) FP5
 - Principal Investigator: Head of the Spanish node (USC): Enrique Macías Virgós
 - Duration: from 01/04/2000 to 31/03/2004
 - Amount: 146,016.00 euros