

CURRICULUM VITAE

Part A. PERSONAL INFORMATION

CV date	2021/11/15
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First and Family name	Tomás Jesús Recio Muñiz		
Social Security, Passport, ID number	10529804J	Age	71
Researcher codes	WoS Researcher ID (*)		
	SCOPUS Author ID(*)	6603169756	
	Open Researcher and Contributor ID (ORCID) **	https://orcid.org/0000-0002-1011-295X	

(*) At least one of these is mandatory

(**) Mandatory

A.1. Current position

Name of University/Institution	Universidad Antonio de Nebrija		
Department	Departamento de Ingeniería Industrial/Escuela Politécnica		
Address and Country	C/ Santa Cruz de Marcenado 27, 28015, Madrid, España		
Phone number	(+34) 91 452 1100	correo electrónico	trecio@nebrija.es
Current position	Profesor Magistral	Fecha inicio	1/10/2020
Keywords	Algebraic Geometry, Commutative Algebra, Symbolic Computation, Automated Reasoning in Geometry, Mathematics Education		

A.2. Education

PhD	University	Year
PhD	Universidad Complutense de Madrid	1976
MsC,BS Mathematics	Universidad Complutense de Madrid	1972

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

- Six “sexenios”.
- Ph. D. advisor of over a dozen students.
- *Awards*: Placa de Honor de la Asociación Española de Científicos (2004), Encomienda de la Orden de Alfonso X El Sabio (2008), Medalla de Plata de la Universidad de Cantabria (2020), Medalla de la Real Sociedad Matemática Española 2021
- Research metrics:

<p>WoS</p> <p>Documents: 78 Total citations: 498 h-index: 13</p>	<p>Researchgate</p> <p>Documents: 201 RG score: 27,55 h-index: 19</p>
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Part B. CV SUMMARY (max. 3500 characters, including spaces)



Full Professor of Algebra at the Universidad de Cantabria (Santander, Spain), since 1982 to September 2020. Full professor (*Catedrático de Universidad*) since Oct. 13, 1981, initial position at Universidad de Granada. Profesor Magistral, Universidad Nebrija, Madrid, Spain, since October 2020.

Previous positions (with tenure) at the C.S.I.C. (Consejo Superior de Investigaciones Científicas, Higher Council for Scientific Research, Madrid), Universidad Complutense de Madrid, Universidad de Málaga, Universidad de Granada.

Large number of research visits, of diverse length, at many different North-American or European universities and research centers, often with participation at the different Seminars and Colloquia.

Teaching experience in a variety of Algebra, Geometry and Mathematics Education undergraduate and graduate courses.

Ph. D. advisor of over a dozen students. Former students hold now university positions (mostly chairs) in Algebra, Computer Science, Geometry or Mathematics Education. See <https://genealogy.math.ndsu.nodak.edu/id.php?id=37084>

Remarkable experience as referee for Ph. D. thesis, University positions, Research centers and universities (evaluation of quality) Research projects Research papers involving many different countries.

Author of over two hundred published scientific papers and four hundred sixty scientific communications in different international journals and conferences. Topics: Real Algebraic Geometry, CAD, Robotics, Computer Algebra and Geometry, Automatic Reasoning in Dynamic Geometry, Mathematics Education. See <http://personales.unican.es/reciot/tomas/publications.html>

Leader of a large research group on Computational Algebraic Geometry, involving researchers from several universities, with external support since 1985, through different Spanish and European projects.

Large experience as responsible (General Chair, Program Chair, Local Organization, etc.) of many different International Conferences, all over the world. Regarding Mathematics Education he has been involved in different international projects such as (in the past 10 years)

—the Klein Project of the ICMI (http://dmuw.zum.de/index.php?title=The_Klein_Project)

—the KIKS, an Erasmus+ project <http://www.kiks.unican.es/en/>

—the StemforYouth, an H2020 project <https://stemforyouth.unican.es>

And, currently

—the MoMaTrE, Learn+, MASCEEE , Asymptote, Edularp and STEAM-Tech, all Erasmus+ projects www.momatre.eu , https://milage.ualg.pt/?page_id=1181 , <http://masce.eu> , <https://www.mathematicsedularp.unican.es> , <https://www.opensteamgroup.unican.es>

Large experience in the management of academic and educational issues, as --former Secretary General, Vice-Provost for Research or Director of the Institute for Educational Sciences (ICE) of the University of Cantabria --former President of the Education Commission of the Real Sociedad Matemática Española, Secretary and President of the national ICMI sub-commission, ie. acting as the Spanish representative to the ICMI (International Commission on Mathematics Instruction) --former President of the Consejo Escolar (Regional School Board) de Cantabria. He has been for about a decade, the President of the Consejo Escolar de Cantabria (Regional School Board) and a member of the Consejo Escolar del Estado Español (Spain School Board). Both institutions have the specific mission to link the education system to the community (of parents, administration and education authorities, teachers, etc). He has developed, over the years, diverse connections to regional, national and international organizations and authorities concerning mathematics education and teacher training.



Further information available at <http://www.recio.tk/> or at <http://www.arbolmat.com/tomas-recio/>

Part C. RELEVANT MERITS

C.1. Publications (including books) 2017-2021

Hohenwarter, M.; Kovács, Z.; Recio, T.: "Deciding geometric properties symbolically in GeoGebra". R&E-SOURCE Open Online Journal for Research and Education. <https://journal.ph-noe.ac.at/index.php/resource/article/view/411> Special Issue no.6, March 2017, ISSN: 2313-1640.

Botana, F.; Recio, T.: "Computing envelopes in dynamic geometry environments". Annals of Mathematics and Artificial Intelligence, May 2017, Volume 80, Issue 1, pp 3–20. <http://link.springer.com/article/10.1007/s10472-016-9500-3>

Recio, T.; Sendra, R.; Villarino, C.: "The importance of being zero". Association for Computing Machinery (ACM). Proceedings ISSAC 2018. ISBN 978-1-4503-5550-6/18/07. pp. 327-333, <https://doi.org/10.1145/3208976.3208981>

Kovács, Z.; Recio, T.; Vélez, M. P.: "Using Automated Reasoning Tools in GeoGebra in the Teaching and Learning of Proving in Geometry". International Journal of Technology in Mathematics Education. Vol. 25, no. 2. pp. 33-50. 2018.

Botana F.; Kovács Z.; Recio T.: "Towards an Automated Geometer." In: Fleuriot J., Wang D., Calmet J. (eds): Artificial Intelligence and Symbolic Computation (AISC) 2018. Lecture Notes in Computer Science, vol 11110. Springer, Cham. pp 215-220. https://doi.org/10.1007/978-3-319-99957-9_15 (2018)

Hauer, B.; Kovács Z.; Recio T.; Vélez, M.P.: "Automated reasoning in elementary geometry: towards inquiry learning." Paedagogische Horizonte. 2(2), 2018. pp. 27-39.

Kovács, Z.; Sólyom-Gecse, C.; Recio, T.: "Rewriting input expressions in complex algebraic geometry provers". Annals of Mathematics and Artificial Intelligence. April 2019, Volume 85, Issue 2–4, pp 73–87. <https://rdcu.be/SEoU>

Botana, F.; Recio, T.: "A proposal for the automatic computation of envelopes of families of plane curves". (2019). Journal of Systems Science and Complexity 32(1):150-157.

Kovács, Z.; Recio, T.; Vélez, M. P.: "Detecting truth, just on parts". Revista Matemática Complutense, Volume 32, Issue 2, May 2019, pp. 451-474. DOI: 10.1007/s13163-018-0286-1 <https://rdcu.be/9vgh>

Davenport, J.; Fleuriot, J.; Quaresma, P.; Recio, T.; Wang, D.: "Intelligent Geometry Tools". Electronic Proceedings Theoretical Computer Science. Vol. 311. Dec. 2019.

Recio T.; Richard, P. R.; Vélez, M.P.: "Designing Tasks Supported by GeoGebra Automated Reasoning Tools for the Development of Mathematical Skills", International Journal of Technology in Mathematics Education, 2019, Vol 26, No 2, pp. 81-89.

Hohenwarter, M.; Kovács, Z.; Recio, T.: "Using GeoGebra Automated Reasoning Tools to explore geometric statements and conjectures". In Hanna, G., de Villiers, M., Reid, D.(Eds.): *Proof Technology in Mathematics Research and Teaching*, Series: Mathematics Education in the Digital Era, Vol. 14, 2019, pp. 215-236. Springer Cham. https://doi.org/10.1007/978-3-030-28483-1_10

Gomez-Diaz, T. and Recio T.: "On the evaluation of research software: the CDUR procedure" [version 2; peer review: 2 approved]. *F1000Research* 2019, 8:1353 (<https://doi.org/10.12688/f1000research.19994.2>)



Botana F.; Kovács Z.; Martínez-Sevilla, A.; Recio T.: “Automatically Augmented Reality with GeoGebra “. In: *Augmented Reality in Educational Settings*, (Ed. Theodosia Prodromou), Brill | Sense. Nov. 2019, pp. 347-368. <https://doi.org/10.1163/9789004408845>

Jablonski, S.; Lázaro del Pozo, C.; Ludwig, M.; Recio, T.: “MathCityMap, paseos matemáticos a través de dispositivos móviles”. UNO, Revista de Didáctica de las Matemáticas. No. 87, enero 2020, pp. 47-54.
<https://www.grao.com/es/producto/mathcitymap-paseos-matematicos-a-traves-dedispositivos-moviles-un08797755>

Kovács, Z.; Recio, T. ; Vélez, M. P.: “Reasoning about linkages with dynamic geometry”. *Journal of Symbolic Computation, J. Symb. Comput.* Volume 97, March–April 2020, pp. 16-30, <https://doi.org/10.1016/j.jsc.2018.12.003>

Botana F.; Kovács Z.; Recio T.: “Automatically Augmented Reality for Outdoor Mathematics”. In: *Research on Outdoor STEM Education in the digital Age. Proceedings of the ROSETA Online Conference in June 2020*. Matthias Ludwig, Simone Jablonski, Amélia Caldeira and Ana Moura (Editors). WTM – Verlag für wissenschaftliche Texte und Medien, Münster 2020. Conference Proceedings in Mathematics Education (6), pages 71-78. <https://doi.org/10.37626/GA9783959871440.0>

Botana, F.; Kovács, Z.; Recio, T.; Vélez, M. P.: “Hacia un autómatas geométrico”. *La Gaceta de la Real Sociedad Matemática Española*, Vol. 23 (2020), Núm. 2, Págs. 343–371. <http://gaceta.rsme.es/vernumero.php?id=114>

Ladra, M.; Páez-Guillán, P.; Recio, T.: “Dealing with negative conditions in automated proving: tools and challenges. The unexpected consequences of Rabinowitsch’s trick.” *Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. RACSAM* 114(4), (oct. 2020). <https://doi.org/10.1007/s13398-020-00874-8>

Recio, T.; Van Vaerenbergh, S.; Vélez, M. P.: “Herramientas de Razonamiento Automático en GeoGebra: qué son y para qué sirven”. *Unión, Revista Iberoamericana de Educación Matemática*. Año XVI - Número 59. Agosto 2020, páginas 08-15. <https://union.fespm.es/index.php/UNION/article/view/202>

Kovács, Z.; Lichtenegger, B.; Recio, T.; Richard P. R.; Vélez, M.P.: “Exploring artwork through Delaunay triangulations”. In: Annie Savard, Rebecca Pearce (eds.), *MACAS in the Digital Era: Proceedings of the 2019 MACAS (Mathematics and its connections to the Arts and Sciences) Symposium*, Montreal, Quebec. Sept. 2020. <https://mcgill.ca/macass2019/proceedings>

Carrillo de Albornoz y Torres, A.; Recio, T.: “De curva a curva, con GeoGebra”. *Boletín de la Sociedad Puig Adam de Profesores de Matemáticas*, vol. 110. Oct. 2020. pp. 8--26.

Kovács, Z.; Recio, T.; Richard, P.R.; Van Vaerenbergh S.; Vélez, M.P.: “Towards an Ecosystem for Computer-Supported Geometric Reasoning”. *International Journal of Mathematical Education in Science and Technology*. Nov. 2, 2020 (on-line). <https://doi.org/10.1080/0020739X.2020.1837400>

Gomez-Díaz, T. and Recio, T.: “A policy and legal Open Science framework: a proposal”. *POLIS*, No. 19, 2020, pp 5-25, <http://www.uet.edu.al/polis/images/1.pdf>

Kovács, Z.; Recio, T.: “Alternative Solutions and Comments to the Problem Corner-- October 2020 issue”. *The Electronic Journal of Mathematics and Technology (eJMT)*. https://php.radford.edu/~ejmt/ProblemCornerDocs/eJMT_Alternative_Solutions_to_Oct2020.pdf

Kovács, Z.; Recio, T.: “GeoGebra reasoning tools for humans and for automatons”. *Electronic Proceedings of the 25th Asian Technology Conference in Mathematics*, December 14-16, 2020. ISSN 1940-4204 (online version).



<http://atcm.mathandtech.org/EP2020/invited/21786.pdf>

Gomez-Diaz T.; Recio T.: "Open comments on the Task Force SIRS report: Scholarly Infrastructures for Research Software (EOSC Executive Board, EOSCArchitecture)". Research Ideas and Outcomes (RIO Journal) 7: e63872. <https://doi.org/10.3897/rio.7.e63872> (05 Feb. 2021)

Etayo-Gordejuela, F.; de Lucas-Sanz, N.; Recio, T.; Vélez, M.P.: "Inventando teoremas con GeoGebra: un nuevo Teorema de la Altura", Boletín de la Soc. Puig Adam, No. 111, Abril 2021, pp. 8—27.

Kovács, Z.; Recio, T.; Vélez, M. P.: "Merging Maple and GeoGebra Automated Reasoning Tools". In: Corless R.M., Gerhard J., Kotsireas I.S. (eds,) Maple in Mathematics Education and Research. MC 2020. Communications in Computer and Information Science, vol 1414. Springer, Cham, 2021. https://doi.org/10.1007/978-3-030-81698-8_17

Barlovits, S.; Jablonski, S.; Lázaro, C.; Ludwig, M.; Recio, T.: "Teaching from a Distance—Math Lessons during COVID-19 in Germany and Spain". *Educ. Sci.* 2021, 11, 406. <https://doi.org/10.3390/educsci11080406>

Kovács, Z.; Recio, T.; Tabera, L.F.; Vélez, M.P.: "Dealing with Degeneracies in Automated Theorem Proving in Geometry". *Mathematics* 2021, 9, 1964. <https://doi.org/10.3390/math9161964>

Fortuny, J.M.; Recio, T.; Richard, P.R.; Roanes-Lozano, E.: "Análisis del discurso de los profesores en formación en un contexto de innovación pedagógica en geometría." *Annales de Didactique et de Sciences Cognitives*, Volume 26, 2021, p. 195 –220.

Losada-Liste, R.; Recio, T.: "Mirando a los cuadros a través de los ojos de Voronoi. (Looking at the paintings through Voronoi's eyes)". Boletín de la Sociedad *Puig Adam* de Profesores de Matemáticas, vol. 112. Oct. 2021, p. 32—53.

Botana F.; Kovács Z.; Recio T.: "A mechanical geometer". *Mathematics in Computer Science*, 15, 631–641 (2021). <https://doi.org/10.1007/s11786-020-00497-7>

Carrillo de Albornoz, A.; Recio T.: "Extending envelope computations in Computer Algebra/Dynamic Geometry environments". *The Electronic Journal of Mathematics and Technology (eJMT)*, Vol. 15, (3), 2021.

Recio, T.; Losada, R.; Kovács, Z.; Ueno, C.: "Discovering Geometric Inequalities: The Concourse of GeoGebra Discovery, Dynamic Coloring and Maple Tools". *Mathematics* 2021, 9(20), 2548. <https://doi.org/10.3390/math9202548>

Kovács, Z.; Recio, T.; Vélez, M.P.: "Approaching Cesàro's inequality through GeoGebra Discovery". Proceedings of the 26th Asian Technology Conference in Mathematics, W.C. Yang, D.B. Meade, M. Majewski (eds). Published by Mathematics and Technology, LLC. ISSN 1940-4204 (Online version: <http://atcm.mathandtech.org/EP2021>). Dec. 13-15, 2021. pp. 160-174.

Taranto, E.; Jablonski, S.; Recio, T.; Mercat, C.; Cunha, E.; Lázaro, C.; Ludwig, M.; Mammana, M.F.: "Professional Development in Mathematics Education - Evaluation of a MOOC on Outdoor Mathematics", *Mathematics* 2021 (to appear).

Kovács, Z.; Recio, T.; Vélez, M. P.: "Automated reasoning tools with GeoGebra: What are they? What are they good for?" In: P. R. Richard, M. P. Vélez, S. van Vaerenbergh (eds): *Mathematics Education in the Age of Artificial Intelligence: How Artificial Intelligence can serve mathematical human learning*. Series: *Mathematics Education in the Digital Era*, Springer (to appear 2022).



Recio, T.: "Epilogue". In: P. R. Richard, M. P. Vélez, S. van Vaerenbergh (eds): Mathematics Education in the Age of Artificial Intelligence: How Artificial Intelligence can serve mathematical human learning. Series: Mathematics Education in the Digital Era, Springer (to appear 2022).

Kovács, Z.; Recio, T.; Vélez, M.P.: "Alternative Solutions and Comments to the Problem Corner-- October 2021 issue". The Electronic Journal of Mathematics and Technology (eJMT) (to appear 2022).

Recio, T.; Vélez, M.P., Ueno, C.: "Niagara Falls and the Origins of Computer Algebra". Maple Transactions (to appear 2022).