Prof. Dr. Tomás Recio

Profesor Magistral
Universidad Nebrija
www.recio.tk

Résumé: Tomás Recio

Full CV at www.recio.tk

- Born in Oviedo, Spain, December 14, 1949.
- B. Sc., M.Sc. (1972), Ph. D. (1976). Universidad Complutense de Madrid.
- Full Professor of Algebra at the Universidad de Cantabria (Santander, Spain), since 1982 to September 2020 (retired). Full professor (*Catedrático de Universidad*) since Oct. 13, 1981, initial position at Universidad de Granada.
- Profesor Magistral, Universidad Nebrija, Madrid, Spain, since October 2020.

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).

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. Currently involved in the Secondary Education Math Teacher Initial Training Master degree of the University of Cantabria.

• 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.

• Seis sexenios

• Author of over two hundred published scientific papers and four hundred fifty 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, more recently

—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 , http://asymptote-project.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 ICM I(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/ ,

Santander, April 2021

Refereed journal publications for the period 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-de-dispositivos-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 autómata geómetra". 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/macas2019/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-Diaz, 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

Botana F.; Kovács Z.; Recio T.: “A mechanical geometer”. Mathematics in Computer Science. Published: 20 November 2020. https://doi.org/10.1007/s11786-020-00497-7

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.