

Juan Rafael Sendra

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EMPLOYMENT

Full Professor in the Department Mathematics at CUNEF Universidad. Chair of Department of Mathematics of CUNEF Universidad

EDUCATION

- Ph.D. in Mathematics, Universidad de Alcalá, 1990. *Awarded Extraordinary Doctorate Prize.*
- B.Sc. in Mathematics, Universidad Complutense de Madrid, 1985.

FIELDS OF INTEREST

Symbolic computation and algebraic manipulation in algebra, algebraic geometry and its applications.

PUBLICATIONS

1. Bizarre M., Lavička M., Sendra J.R., Vršek J. Characterization of polynomial surfaces of revolution and polynomial quadrics. *Journal of Computational and Applied Mathematics* 474 (2026) 116939 <https://doi.org/10.1016/j.cam.2025.116939>
2. Falkensteiner S., Pavlov D., Sendra J.R., "On real and observable rational realizations of input-output equations". *Systems & Control Letters*, 198, 106059, (2025) <https://doi.org/10.1016/j.sysconle.2025.106059>
3. Falkensteiner S, Ovchinnikov A., Sendra J.R. "Algorithm for globally identifiable reparametrizations of ODEs". *Journal of Symbolic Computation*, 128, 102385, (2025) <https://doi.org/10.1016/j.jsc.2024.102385>
4. Falkensteiner S., Sendra J.R. "Rationality and Parametrizations of Algebraic Curves under Specializations". *Journal of Algebra*, 659, 698–744, (2024) <https://doi.org/10.1016/j.jalgebra.2024.07.009>
5. Caravantes J., Pérez-Díaz S., Sendra J.R., "Birational Reparametrizations of Surfaces" *Rev. Real Acad. Cienc. Exactas Fis. Nat. Ser. A-Mat.* 118, 109, (2024) <https://doi.org/10.1007/s13398-024-01609>
6. Falkensteiner S., Sendra J.R. "Transforming Radical Differential Equations to Algebraic Differential Equations". *Mediterr. J. Math.* 21, 87, (2024) <https://doi.org/10.1007/s00009-024-02624-1>

7. Falkensteiner S., Mitterramskogler J. Sendra J.R., Winkler F. "The Algebro-Geometric Method: solving algebraic differential equations by parametrizations." *Bulletin of the American Mathematical Society*, Volume 60, Number 1, Pages 85–122 (2023). <https://doi.org/10.1090/bull/1773>.
8. Caravantes J., Sendra J.R., Sevilla D., Villarino C. "A note about rational surfaces as unions of affine planes." *Revista de la Real Academia de Ciencias Exactas, Físicas y Naturales. Serie A. Mat.* 117, 69 (2023). <https://doi.org/10.1007/s13398-023-01401-1>
9. Chan E.Y.S., Corless R.M., González-Vega L., Sendra J.R., Sendra J. "Inner Bohemian inverses." *Applied Mathematics and Computation*, Volume 421, 126945 (2022). <https://doi.org/10.1016/j.amc.2022.126945>
10. Sendra J.R., Winkler F., Pérez-Díaz. "Rational Algebraic Curves: A Computer Algebra Approach." Springer Verlag Heidelberg, series Algorithms and Computation in Mathematics. Volume 22. 272 pages. ISBN 978-3-540-73724-7. (2007)

WORKING PAPERS

1. Hong H., Profili D., Sendra J.R., "Conditions for eigenvalue configurations of two real symmetric matrices: a signature approach" arXiv:2401.00866
2. Hong H., Profili D., Sendra J.R., "Conditions for eigenvalue configurations of two real symmetric matrices: a symmetric function approach" arXiv:2401.00089
3. González–Vega L., Sendra J.R., Sendra J. "Eigenvalues of Real Matrices with Prescribed Principal Minors Sign and Descartes Law of Signs" arXiv: 2305.08861

SELECTED ACADEMIC HONOURS AND GRANTS

- Sendra J.R. Awarded Extraordinary Doctorate Prize.
- San Segundo F., Sendra J.R., Sendra J. "Algorithms for offset curves and surfaces". First prize for the poster in Section 15 (Computational Geometry) at the International Conference of Mathematicians (ICM 2006).
- Profili D., Hoon H., Sendra J.R. "Conditions for eigenvalues configurations of two real symmetric matrices" Distinguished Poster Award at the ISSAC2024.

SELECTED PRESENTATIONS

Sendra J.R. "Symbolic and algebraic manipulation of parametric algebraic curves and surfaces". ISSAC 2025. Guanajuato, México. Sendra J.R. "Working in geometry with radicals of polynomials", LALO60, London, Canada, 2024, Sendra J.R. "El problema de la suprayectividad de una parametrización" Bienal RSME 2024, Pamplona, Spain, Sendra J.R. "Algebro--geometric methods to approach radical differential equations". CGTA 2023 Austria, Sendra J.R. "Computing the maximum spread of a Bohemian symmetric matrix with entries in $[a,b]$ ", ILAS2023, Madrid.Spain, Sendra J.R. "Transforming some Differential Equations into Algebraic Differential Equations". Workshop on Differential Algebra – MPI Leipzig, Germany 2022, Sendra J.R. "Transformación de ecuaciones diferenciales radicales en ecuaciones diferenciales algebraicas" RSME-UMA 2022, Ronda, Spain, Sendra J.R. "Bohemian Inner Inverses: A First Step Towards Bohemian Generalized Inverses" SIAM2021, online.

PROFESSIONAL ACTIVITIES

- Member of the Experimental Science Evaluation Committee of the ANECA Teacher Evaluation Program (From March 2016 to 2020). Supporting member 2023.
- Chair of Dep. of Physics and Math. at the Univ. of Alcalá from 11/01/12 to 03/21/13.
- Deputy Director of the Dep. of Physics and Math. at the Univ. of Alcalá from 03/23/13 to 07/31/13.
- Chair of the Dep. of Mathematics at the Univ. of Alcalá from 04/27/04 to 02/21/07