

Fecha del CVA	28/01/2026
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## Parte A. DATOS PERSONALES

Nombre	Fernando		
Apellidos	Soler Toscano		
Sexo	No Contesta	Fecha de Nacimiento	
DNI/NIE/Pasaporte			
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## Parte B. RESUMEN DEL CV

I am Professor (Catedrático) in the field of Logic and Philosophy of Science at the University of Seville. My research is highly interdisciplinary, stemming from my dual background in Philosophy and Computer Engineering. My work focuses on the study of information from various perspectives, addressing foundational issues (logical, linguistic, mathematical, or computational) as well as applications across diverse disciplines, including neuroscience, ecology, psychology, cryptography, and physics.

In the field of logic, I have worked on epistemic logics that model the knowledge of agents capable of public or private communication. I have been particularly interested in abductive reasoning, which agents use to explain surprising events. This line of research has resulted in numerous publications on the logical design of security protocols and logics of knowledge and belief.

I have also worked in algorithmic information theory, developing approaches to Kolmogorov-Chaitin complexity, particularly useful for comparing short-length strings. This research line has led to various publications, including some of my most cited articles. It has also enabled highly interdisciplinary applications, such as measuring the complexity of ecosystems approaching critical points or assessing human capacity to produce pseudo-random strings.

In recent years, I have focused primarily on interdisciplinary work in the field of dynamical systems, with applications mainly in neuroscience and ecology. I have led a project in which we applied our methodology, based on Informational Structures, to classify patients with different disorders of consciousness. We have also applied similar measures to ecological data, yielding results that have been published in distinguished journals.

I have been Principal Investigator of three research projects and of the Research Group on Logic, Language, and Information at the University of Seville. For eight years, I was a member of the Board of the Society for Logic, Methodology and Philosophy of Science in Spain. Currently, I hold three recognized research 'sexenios' and another one knowledge transfer.

## Parte C. LISTADO DE APORTACIONES MÁS RELEVANTES

### C.1. Publicaciones más importantes en libros y revistas con "peer review" y conferencias

AC: Autor de correspondencia; (nº x / nº y): posición firma solicitante / total autores. Si aplica, indique el número de citas

- Artículo científico.** F. Soler Toscano; J.A. Galadí; A. Escrichs; et al; G Deco. 2022. What lies underneath: precise classification of brain states using time-dependent topological structure of dynamics. PLOS Computational Biology. PLOS. 18-9. <https://doi.org/10.1371/journal.pcbi.1010412>

- 2 **Artículo científico.** Francisco J. Esteban; Eva Vargas; José A Langa; Fernando Soler-Toscano. 2026. Synchronization, Information, and Brain Dynamics in Consciousness Research. Applied Sciences. 16.
- 3 **Artículo científico.** Pablo; Piotr; José A.; Fernando. 2024. Structural stability of invasion graphs for Lotka–Volterra systems. Journal of Mathematical Biology. 88-64. <https://doi.org/10.1007/s00285-024-02087-8>
- 4 **Artículo científico.** Oscar Godoy; Fernando Soler Toscano; José R Portillo; José A Langa. 2024. The assembly and dynamics of ecological communities in an ever-changing world. Ecological Monographs. 94-4. <https://doi.org/10.1002/ecm.1633>
- 5 **Artículo científico.** Fernando. 2023. Conocimiento y creencia en lógica epistémica dinámica. Andamios. <https://doi.org/10.29092/uacm.v20i53.1036>
- 6 **Artículo científico.** José R. Portillo; Fernando Soler Toscano; José A. Langa. 2022. Global structural stability and the role of cooperation in mutualistic systems. Plos ONE. PLOS. 17-4. <https://doi.org/10.1371/journal.pone.0267404>
- 7 **Artículo científico.** Javier Galadí García; Fernando Soler Toscano; José A Langa Rosado. 2022. Model transform and local parameters. Application to instantaneous attractors. Chaos, Solitons & Fractals. Elsevier. 159. <https://doi.org/10.1016/j.chaos.2022.112094>
- 8 **Capítulo de libro.** Angel Nepomuceno Fernández; Fernando Soler Toscano; Fernando R. Velázquez Quesada. 2023. Abduction from a Dynamic Epistemic Perspective: Non-omniscient Agents and Multiagent Settings. Handbook of Abductive Cognition. Springer. ISBN 978-3-030-68436-5. [https://doi.org/10.1007/978-3-030-68436-5\\_25-1](https://doi.org/10.1007/978-3-030-68436-5_25-1)
- 9 **Libro o monografía científica.** Hector Zenil; Fernando Soler-Toscano; Nicolas Gauvrit. 2022. Methods and Applications of Algorithmic Complexity. Methods and Applications of Algorithmic Complexity. Springer. pp.1-267. ISBN 978-3-662-64983-1. <https://doi.org/10.1007/978-3-662-64985-5>
- 10 **Software de investigación.** Alfredo Burrieza; Fernando Soler-Toscano; Antonio Yuste-Ginel. 2025. A meta-modal logic for bisimulations. Archive of Formal Proofs.

## C.2. Congresos

- 1 Esteban FJ; Ruiz-Amezcuca P; Langa JA; Soler-Toscano F; Caraballo T; Nieto-Díaz M. Spinal cord injury regeneration model based on informational structures derived from Lotka-Volterra dynamics. XXII CONGRESO Sociedad Española de Histología e Ingeniería Tisular. Sociedad Española de Histología e Ingeniería Tisular. 2024. España.
- 2 Oscar Godoy; Fernando Soler Toscano; Jose R. Portillo; Antonio Suarez; Jose A Langa. Facilitation maximizes biodiversity. 2024 ESA Annual Meeting. Ecological Society of America. 2024. Estados Unidos de América.
- 3 Fernando Soler Toscano. Informational structures and informational fields in ecology and neuroscience. Possibilities for prediction and classification. REWIRING LIFE: The future implications of engineering biology. LifeHUB - CSIC. 2024. España.
- 4 Fernando Soler Toscano; José A. Langa Rosado; José R. Portillo Fernández. Information structures and consciousness. Models of Consciousness 2022. Universidad de Stanford. 2022. Estados Unidos de América.
- 5 Óscar Godoy; Pablo Almaraz; Fernando Soler Toscano; José A. Langa Rosado. Non-equilibrium dynamics shaped by temporal changes in biotic interactions. 2022 Annual Meeting - Ecological Society of America. Ecological Society of America. 2022. Canadá.
- 6 Fernando Soler Toscano. Characterization of brain states using time-dependent topological structure of dynamics. Brain Dynamics and Consciousness. Universidad de Jaén. 2022. España.

## C.3. Proyectos o líneas de investigación

- 1 **Proyecto.** PID2024-157876NA-I00, Lógica del razonamiento médico. El papel de la abducción y las hipótesis causales. Plan Estatal 2024-2027 - Proyectos Investigación No Orientada. Cristina Barés Gómez. (Universidad de Sevilla). 01/09/2025-31/08/2029. 59.375 €.

- 2 **Proyecto.** PID2024-156228NB-I00, Nuevas tendencias y desafíos en dinámica determinista y estocástica en problemas de las ciencias aplicadas. Plan Estatal 2024-2027 - Proyectos Investigación No Orientada. Tomás Carballo Garrido. (Universidad de Sevilla). 01/09/2025-31/08/2029. 155.000 €.
- 3 **Proyecto.** Métodos lógicos y abductivos aplicados a la semántica y la pragmática de la interacción comunicativa. Ministerio de Ciencia e Innovación. Francisco Salguero Lamillar. (Universidad de Sevilla). 01/09/2021-31/08/2025. 29.040 €.
- 4 **Proyecto.** Complejidad y sistemas dinámicos: teoría matemática y aplicaciones a ecología y a la neurociencia de la consciencia. Consejería de Economía, Conocimiento, Empresas y Universidad - Junta de Andalucía. Fernando Soler Toscano. (Universidad de Sevilla). 05/10/2021-31/12/2022. 32.700 €. Investigador principal.
- 5 **Proyecto.** Deterministic and stochastic dynamics of models from Neuroscience, Epidemiology, Biology and other branches of the Applied Sciences. (Universidad de Sevilla). 01/02/2020-31/01/2022. 60.000 €. Miembro de equipo.