



Perspectives

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# Phase Transitions in Grey Matter

Brain Architecture and Mind Dynamics

*Phase Transitions in Grey Matter: Brain Architecture and Mind Dynamics* relates the complex systems that we know as 'mind' and 'brain' to simple concepts in physics such as 'phase transition' and 'criticality' and establishes a close mathematical link between them. A serious review of live issues in science – from interaction and correlation to emergence, scale invariance, attractors, noise and chaos—this book demonstrates their relevance to intelligence and consciousness. The result is a significant and useful portrait of what 'mind' currently means to science and aggregates widely dispersed and sometimes hard to find topics into one resource.

Key highlights:

- Provides a coherent basis for the existence of criticality in the brain, and shows how some of its main outstanding properties may be understood
- Deeply explores the assumption that phase transition is the most relevant concept to understand the mind
- Offers a strong foundation for those interested in making a complete and useful portrait of the brain

This book is for advanced graduate and graduate students in physics, applied mathematics, biology and medicine. It is an excellent resource for practitioners and those curious about recent advances in neurosciences.

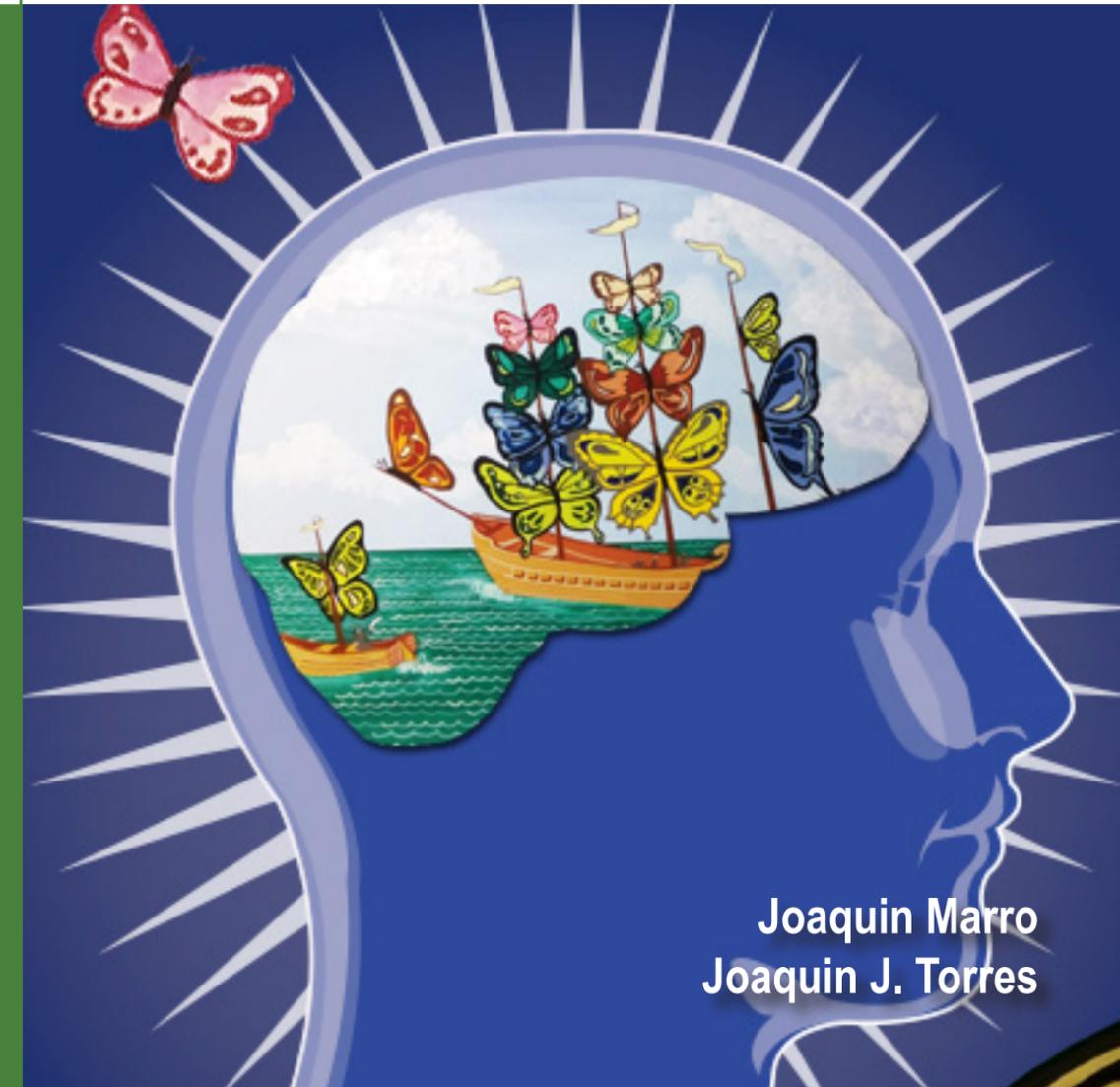
**Joaquin Marro, Ph.D.**, is Professor Emeritus at the University of Granada, where he spent 30 years and founded the “Granada Seminar” and the “Institute *Carlos 1* for Theoretical and Computational Physics”. His focus for more than 20 years has been mathematical modeling of the brain structure and activity. He is the author of more than 200 research papers and several books.

**Joaquin J. Torres, Ph.D.**, is a Professor of physics at Granada University. His distinctions include being awarded the “Ramon y Cajal” grant from the Spanish Ministry of Research. He is a frequent author of research papers, and serves as an Associate Editor on several journals, including *Neurocomputing* (Elsevier) and *Frontiers in Computational Neuroscience* (Frontiers) and *Scientific Reports* (Nature).

Marro  
Torres

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