

## **Giorgos Tsironis**

**Professor, Department of Physics, University of Crete**

**Email to: [tsironis.georgios@ac.eap.gr](mailto:tsironis.georgios@ac.eap.gr) , [gts@physics.uoc.gr](mailto:gts@physics.uoc.gr)**

Giorgos P. Tsironis is Professor of Physics at the Physics Department of the University of Crete, director of the Institute of Theoretical and Computational Physics of the University of Crete and also leads the Nonlinear and Statistical Physics Group at the IESL-FORTH. He obtained his PhD in Theoretical Condensed Matter and Statistical Physics from the University of Rochester (USA) in 1987. He was a postdoctoral associate at the University of California San Diego (1987-89) and the Fermi National Accelerator Laboratory (1989-91) and assistant professor of Physics at the University of North Texas (1991-96) while also affiliated with the Superconducting Super Collider Laboratory (1991-1993). He joined the Department of Physics of the University of Crete in 1994 as associate professor and became professor in 2000. Over the years was awarded a number of other academic positions: he was visiting professor of the University of Barcelona in Spain (2000-1 and 2006-7), professor at Nazarbayev University in Kazakhstan (2014-15) while more recently he has been visiting fellow and professor at the School of Engineering and Applied Sciences of Harvard University (2017-present) where he taught undergraduate as well as specialized research courses.

His research interests are in the areas of condensed matter physics, statistical mechanics, nonlinear physics, complexity and biological physics, metamaterials and artificial intelligence. In 1996 he was awarded the international Stephanos Pnevmatikos award for his “many contributions to nonequilibrium statistical mechanics and the theory of solitons in non-linear lattices, with applications to molecular crystals and biophysics”. His recent interests involve the role of nonlinearities and breathers in superconducting metamaterials and artificial intelligence applications in complex systems. He has introduced a series of two semester courses on Machine Learning in the Department of Physics of the University of Crete and currently focuses on fundamental and applied research work in this direction. He has published over 200 papers in refereed journals while he (co-)organized a number of international conferences, workshops and advanced summer schools in the area of statistical mechanics and non-linear physics. During his career, he mentored 15 PhD students, many of which are currently holding faculty positions in academia.

In terms of administration positions, he has served also as director of the University of Crete Computer Center (2003-09), chairman of the Department of Physics of the University of Crete (2007-2011), acting chair of the Department of Physics, Nazarbayev University (2014-15) and deputy rector of the University of Crete (2016-17). In recent years, he established the Crete Center for Quantum Complexity and Nanotechnology which at the initial stage (2013-2017) has been funded by EU.

### *Selected Publications*

---

1. G. D. Barmparis and G. P. Tsironis, Physics-informed machine learning for the COVID-19 pandemic: Adherence to social distancing and short-term predictions for eight countries, *Quantitative Biology* 10, 139 (2022)
2. E. Angelaki, M. E. Marketou, G. D. Barmparis, A. Patrianakos, P. E. Vardas, F. Parthenakis and G. P. Tsironis, Detection of abnormal left ventricular geometry in patients without cardiovascular disease through machine learning: An ECG-based approach, *J. Clin. Hypertens.* 00:1-11, (2021)
3. G. D. Barmparis and G. P. Tsironis, Discovering nonlinear resonances through physics informed machine learning, *J. Opt. Soc. Am. B*, 38, C120 (2021).
4. J. Hizanidis, N. Lazarides and G. P. Tsironis, Pattern formation and chimera states in 2D SQUID metamaterials, *Chaos* 30 , 013115 (2020)
5. N. Lazarides and G. P. Tsironis, Superconducting metamaterials, *Phys. Rep.* 752, 1 (2018)