# Dr. Ioanna Chitzanidi

*(Dr. Johanne Hizanidis)*

## Education

2002–2007 **PhD, Physics**, *Technische Universität Berlin, Germany*.
Thesis title: Control of noise-induced spatio-temporal dynamics in superlattices
Supervisor: Prof. Dr. Eckehard Schöll, PhD
Degree: Dr. rer. nat.

1996–2002 **BSc, Physics**, *University of Athens, Greece*.
Thesis title: Ring dark solitons
Specialization: Electronics and Telecommunications
Supervisor: Prof. Dimitrios Frantzeskakis
Degree: Ptychion

## Professional Experience

08/2018–
07/2021 **Principal Researcher**.
Physics Department, University of Crete.
Main research field: **Chimera states and spatio-temporal dynamics in SQUID metamaterials.**

01/2015–
07/2018 **Senior Researcher**.
"Center for Quantum Complexity and Nanotechnology (QCN)", Physics Department, University of Crete.
Main research field: **Chimera states: from superconducting oscillators to biological neurons.**

07/2014–
12/2014 **Postdoctoral Researcher**.
KRIPIS Project "Advanced Materials for Energy", National Center for Scientific Research "Demokritos".
Main research field: **Synchronization phenomena in population dynamics systems.**

07/2012–
06/2014 **Postdoctoral Researcher**.
Thales Project "Mathematical Modeling of Complex Systems with Applications in Biomedicine, Physics and the Technology of Materials".
Main research field: **Synchronization and collective behavior in complex networks of biological neurons.**

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10/2012– **Adjunct Professor**.
02/2014 School of Pedagogical and Technological Education (ASPETE), Electronics Department

10/2010– **Adjunct Professor**.
02/2014 Technological Educational Institute of Kalamata, Branch of Sparta, Department of Information Technology and Telecommunications

01/2009– **Postdoctoral Researcher**.
06/2010 Optical Communications Laboratory, Informatics and Telecommunications Department, University of Athens (Group of Prof. Dimitris Syvridis).
Main research field: **Nonlinear dynamics in lasers and chaotic optical communication.**

10/2002– **Research Assistant**.
12/2007 Technische Universität Berlin (Group of Prof. Dr. Eckehard Schöll).
Project title: Sonderforschungsbereich 555 (Complex Nonlinear Processes)
Main research field: **Nonlinear dynamics and control in semiconductor superlattices.**

## Editorial/Translation experience

- **Editorial Board Member for Scientific Reports, Nature Publishing Group** in the Mathematical Physics, Thermodynamics and Nonlinear Dynamics Category (since 08/2018).
- Translation from English to Greek of "Complex Variables" by Mark J. Ablowitz and Athanasios S. Fokas, for **Crete University Press** (2013).
- Editing of "Introduction to Electrodynamics" by David J. Griffiths, for **Crete University Press** (2012).

## Research Funding

2018-2021 **Hellenic Foundation for Research and Innovation Grant**.
Project title: SQUID Metamaterials: Chimera states and Spatio-temporal dynamics
Host Institute: Department of Physics, University of Crete, Greece.
Principal Investigator: J. Hizanidis.
**Total budget: 200,000 Euros**.

2017-2019 **Program to increase the Competitiveness of NUST "MISiS" among the World**.
Project title: Pattern formation in locally coupled SQUID oscillators
Collaborating institutes: Department of Theoretical Physics and Quantum Technologies, MISIS. Moscow, Russia & Department of Physics, University of Crete, Greece.
Leading Scientist: J. Hizanidis.
**Total Budget: 12,000 Euros**.

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2014 **Scientific Projects 2014, John S. Latsis Public Benefit Foundation**.
Project title : Collective behavior in networks of biological neurons: mathematical modelling and software development
Collaborating institutes: NCSR "Demokritos", University of Barcelona, University of Aberdeen, University of Patras, Universiteit van Amsterdam.
Coordinator: J. Hizanidis.
**Total Budget: 12,000 Euros.**

## Exchange Programs

2013–2015 **IKYDA**.
Supported by the Greek State Scholarship Foundation (IKY) and the German Academic Exchange Service (DAAD).
Project title: Chimera states in dynamical networks of nonlinear systems
Coordinators: J. Hizanidis & A. Provata (Greece), P. Hövel & E. Schöll (Germany)
**Total Budget: 15,000 Euros.**

## Scholarships

06/2008–12/2008 **STIBET 2008**.
DAAD "Research Assistantship" Program

## Teaching

Abstract Neuron Models — **Summer semesters 2017 & 2019**.
Lecture at the Interdisciplinary Graduate Programme "BRAIN and MIND sciences"
University of Crete.

Nonlinear Dynamical Systems — **Summer semester 2019**.
Physics Department, University of Crete
(Graduate Course).

Physics I: Electrostatics & Electronics — **Winter semesters 2013/2014 & 2012/2013**.
Technological Educational Institute of Sparta
Department of Information Technology and Telecommunications.

Automatic Control Systems I — **Winter semester 2013/2014 & Year 2012/2013**.
School of Pedagogical and Technological Education (ASPETE)
Electronics Department.

Calculus II: Infinite Series — **Summer semester 2012**.
Technological Educational Institute of Sparta
Department of Information Technology and Telecommunications.

Linear Algebra — **Winter semester 2011/2012**.
Technological Educational Institute of Sparta
Department of Information Technology and Telecommunications.

Probability Theory and Statistics — **Winter semester 2011/2012**.
Technological Educational Institute of Sparta
Department of Information Technology and Telecommunications.

Digital Circuits — **Summer semester 2011**.
Technological Educational Institute of Sparta
Department of Information Technology and Telecommunications.

Analog Electronics — **Winter semester 2010/2011**.
Technological Educational Institute of Sparta
Department of Information Technology and Telecommunications.

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## Student Supervision

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|---|---|
| MSc thesis 2019 | "Modelling dynamics using Machine Learning", Maria-Myrto Villia, University of Crete, Greece |
| MSc rotation project 2018 | "Modeling chaotic dynamical systems with recurrent neural networks", Lazaros Mitskopoulos, Brain and Mind Sciences Graduate Program, University of Crete, Greece |
| BSc thesis 2018 | "Chimera states in modular networks: the C.elegans paradigm", Maria-Myrto Villia, University of Crete, Greece |
| PhD thesis 2018 | "Control of collective behavior in laser arrays", Joniald Shena, University of Crete, Greece |
| PhD thesis 2015 | "Synchronization phenomena in lattices of coupled oscillators", Evangelia Panagakou, University of Athens, Greece |
| MSc thesis 2015 | "Study and analysis of MRI data for modelling of neural networks in the brain", Nefeli Tsigkri-De Smedt, University of Athens, Greece |
| BSc thesis 2014 | "Nonlinear Dynamics and Chaos: Simulation of the Lorenz attractor with Easy Java Simulation open software", Anastassia Trompouki, Technological Educational Institute of Kalamata, Greece |
| BSc thesis 2012 | "Study of linear Automatic Control Systems using MATLAB (Simulink), Panagiotis Aleiferis, Technological Educational Institute of Kalamata, Greece |
| MSc thesis 2007 | "Multiple time-delayed feedback control of the coherence resonance in a model showing a global bifurcation", Roland Aust, Technische Universität Berlin, Germany |

## Computer skills

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|---|---|
| Programming Languages | C++, C, Python, Perl, HTML, bash |
| Typeset | LaTeX |
| Software Packages | Mathematica, Matlab |
| Office Packages | OpenOffice, Microsoft Office |
| Operating Systems | Linux, Windows |

## Languages

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|---|---|---|
| Greek | **Mother tongue** | |
| English | **Fluent** | *excellent written and oral skills* |
| German | **Fluent** | *excellent written and oral skills* |
| Russian | **Beginner Level** | |

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## Research Interests

- Nonlinear Dynamics and Chaos
- Collective Behavior, Mathematics of Networks, Complexity
- Brain Dynamics and Modeling, Synchronization Phenomena, Chimera States
- Nonlinear Analysis of Human Brain Magnetic Resonance Imaging (MRI) data
- Chaos Control, Time-Delayed Feedback & Delay Differential Equations
- Bifurcation Analysis
- Stochastic Processes
- Nonlinear Dynamics in Semiconductor Lasers
- Nonlinear Electronic Transport in Nanostructures
- Superconducting Metamaterials
- Machine Learning

## Talks & Posters in International Conferences

Talk "Pattern formation and chimeras in SQUID metamaterials", *Symposium in Honor of the 60th Birthday of Giorgos P. Tsironis*, June 2019, Chania, Greece.

**Invited Talk** "Pattern formation and chimeras in SQUID metamaterials", *School and Workshop on Patterns of Synchrony, Chimera States and Beyond*, May 2019, ICTP, Trieste, Italy.

Poster L. Mitskopoulos, J. Hizanidis & G. P. Tsironis:"Modelling the Hindmarsh-Rose Chaotic Dynamics with Recurrent Neural Networks", *Symposium on Machine Learning and Dynamical Systems, Imperial College London*, February 2019, London, UK.

Talk "Flux bias-controlled spatio-temporal dynamics in SQUID lattices", *Nonlinear Localization in Lattices – NLL 2018*, June 2018, Spetses, Greece.

Talk "Robust chimera states in superconducting metamaterials", *PhysCon*, July 2017, Florence, Italy.

Talk P. Hövel, A. Schmidt, T. Kasimatis, J. Hizanidis & A. Provata: "Chimera patterns as complex systems: Examples from two-dimensional networks of coupled neurons", *Crossroads in Complex Systems*, IFISC, June 2017, Mallorca, Spain.

Talk P. Hövel, J. Hizanidis, T. Isele & A. Provata: "Controlling chimera states by a block of excitable units", *Patterns of Dynamics 2016*, July 2016, Berlin, Germany.

Talk "Chimeras in locally coupled SQUIDs: Lions, goats and snakes ", *Quantum metamaterials and Quantum Technology*, June 2016, Spetses, Greece.

**Invited Talk** "Chimeras in SQUIDs: lions, goats and snakes", *XXXVI Dynamics Days Europe*, June 2016, Corfu, Greece.

Talk E. Panagakou, J. Hizanidis, P. Hövel, I. Omelchenko, E. Schöll & A. Provata: "Chimera states in population dynamics: networks with fragmented and hierarchical connectivities", *Conference in Complex Systems (CCS'15)*, September 2015, Arizona, USA.

Talk "Chimera-like dynamics and metastability in the C.elegans brain network", *PhysCon*, August 2015, Istanbul, Turkey.

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**Invited Talk** "Chimera-like states in modular neural networks", *MACOMSYS Thales Workshop*, July 2015, Patras, Greece.

Talk P. Hövel, A. Vüllings, I. Omelchenko & J. Hizanidis: "Clustered Chimera States in Systems of Type-I Excitability", *WIAS Workshop: Collective dynamics in coupled oscillator systems*, November 2014, Berlin, Germany.

Talk P. Hövel, A. Vüllings, I. Omelchenko & J. Hizanidis: "Chimera states in neuronal systems", *ECCS'14 European Conference on Complex Systems*, September 2014, Lucca, Italy.

Poster I. Omelchenko, A. Provata, J. Hizanidis, E. Schöll & P. Hövel:"Robustness of chimera states", *International Conference on Control of Self-Organizing Nonlinear Systems*, August 2014, Warnemünde, Germany.

**Invited Talk** "Chimera states in networks of nonlocally coupled neural oscillators", *Greek-Turkish Conference on Statistical Mechanics and Dynamical Systems*, July 2014, Athens, Greece.

**Invited Talk** "Chimera states in networks of nonlocally coupled neural oscillators", *10th AIMS Conference on Dynamical Systems, Differential Equations, and Applications*, July 2014, Madrid, Spain.

Talk "Clustered Chimera States in Systems of Type-I Excitability", *DPG Spring meeting 2014*, Dresden, Germany.

**Invited Talk** "Chimera states in networks of biological neurons and coupled damped pendulums", *MACOMSYS Thales Workshop*, July 2013, Heraklion, Greece.

Poster "Chimera states in networks of excitable elements", *XXXIII Dynamics Days Europe*, June 2013, Madrid, Spain.

Poster A. Bezerianos, V. G. Kanas, J. Hizanidis & T. Bountis:"Advanced techniques to model bi-directional communication of neural ensembles: theoretical considerations and obstacles, *AREADNE Research in Encoding and Decoding of Neural Ensembles*, June 2012, Santorini, Greece.

Poster "Nonlinear analysis of Diffusion Tensor Imaging (DTI) data of human brain neuron tracts", *DPG Spring meeting 2012*, Berlin, Germany.

Talk "Control of coherence resonance in semiconductor superlattices", *Chaotic Modeling and Simulation International Conference*, June 2008, Chania, Greece.

Talk "Effect of noise and delay near a global bifurcation in superlattices", *DPG Spring meeting 2008*, Berlin, Germany.

Talk "Delay-induced multistability in a generic model for excitable dynamics", *ASME International Design Engineering Technical Conferences (IDETC)*, September 2007, Las Vegas, USA.

Poster "Delay- and noise-induced dynamics near a global bifurcation", *Dynamics Days Europe*, September 2006, Heraklion, Crete, Greece.

Poster "Noise induced front motion: signature of a global bifurcation", *Constructive Role of Noise in Complex Systems*, July 2006, MPIPKS Dresden, Germany.

Talk "Noise induced fronts in superlattices", *ICFN 2005, 18th International Conference on Noise and Fluctuations*, September 2005, Salamanca, Spain.

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Talk "Noise induced moving fronts in semiconductor superlattices", *Dynamic Days Europe 2005*, July 2005, Berlin, Germany.

Talk "Control of noise induced oscillations in semiconductor superlattices", *DPG Spring meeting 2005*, Berlin, Germany.

Talk "Control of noise induced oscillations in semiconductor superlattices", *Dresdner Herbstseminar des Arbeitskreises Nichtlineare Physik*, November 2004, Dresden, Germany.

Poster "Deterministic and stochastic dynamics in semiconductor superlattices", *International Conference and Summer School on Complexity in Science and Society*, July 2004, Patras and Ancient Olympia, Greece.

Poster "Noise induced pattern formation in semiconductor nanostructures", *Workshop on Stochastic Systems with Delay and Memory*, February 2004, Martin-Luther-Universität, Leucorea, Wittenberg, Germany.

Poster E. Schöll & J. Hizanidis:"Control of noise-induced spatiotemporal patterns in superlattices", *15th International Conference on Nonequilibrium Carrier Dynamics in Semiconductors*, July 2007, Tokyo, Japan.

Poster E. Schöll & J. Hizanidis:"Noise-induced current oscillations in superlattices: from stationary to moving domains", *International Conference on the Physics of Semiconductors (ICPS)*, July 2006, Vienna, Austria.

## Publications

### International Journals

J33. G. D. Barmparis, G. Neofotistos, M. Mattheakis, J. Hizanidis, G. P. Tsironis, and E. Kaxiras: *"Robust prediction of complex spatiotemporal states through machine learning with sparse sensing"*, submitted to Chaos Sol. & Fract. (2019).

J32. J. Hizanidis, N. Lazarides, and G. P. Tsironis: *"Pattern formation and chimera states in 2D SQUID metamaterials"*, arXiv:1908.00004, submitted to Chaos (2019).

J31. A. Pournaki, L. Merfort, J. Ruiz, N. E. Kouvaris, P. Hövel, and J. Hizanidis: *"Synchronization patterns in modular neuronal networks: a case study of C. elegans"*, to appear in Front. Appl. Math. Stat. (2019).

J30. N. Lazarides, J. Hizanidis, and G. P. Tsironis: *"Controlled Generation of Chimera States in SQUID Metasurfaces using DC Flux Gradients"*, Chaos Sol. & Fract. **130**, 109413 (2019).

J29. J. Hizanidis, N. Lazarides, and G. P. Tsironis: *"Chimera states in networks of locally and non-locally coupled SQUIDs"*, Front. Appl. Math. Stat. **5**, 33 (2019).

J28. G. Neofotistos, M. Mattheakis, G. D. Barmparis, J. Hizanidis, G. P. Tsironis, and E. Kaxiras: *"Machine learning with observers predicts complex spatiotemporal behavior"*, Front. Phys. **7**, 24 (2019).

J27. J. Shena, J. Hizanidis, N. E. Kouvaris, and G. P. Tsironis: *"Class B lasers in star networks with optoelectronic feedback"*, Phys. Rev. A **98**, 053817 (2018).

J26. J. Hizanidis, N. Lazarides, and G. P. Tsironis: *"Flux bias-controlled chaos and extreme multistability in SQUID oscillators"*, Chaos **28**, 032215 (2018).

J25. T Kasimatis, J. Hizanidis, and A Provata: *"Three-dimensional chimera patterns in networks of spiking neuron oscillators"*, Phys. Rev. E **97**, 052213 (2018).

J24. J. Shena, J. Hizanidis, P. Hövel, and G. P. Tsironis: *"Multiclustered chimeras in large semiconductor laser arrays with nonlocal interactions"*, Phys. Rev. E **96**, 032215 (2017).

J23. N. Tsigkri-De Smedt, Johanne Hizanidis, E. Schöll, P. Hövel, and A. Provata: *"Chimeras in Leaky Integrate-and-Fire Neural Networks: Effects of Reflecting Connectivities "*, European Physical Journal B **90** 139 (2017).

J22. A. Schmidt, T. Kasimatis, J. Hizanidis, P. Hövel and A. Provata: *"Chimera patterns in two-dimensional networks of coupled neurons"*, Phys. Rev. E **95**, 032224 (2017)

J21. J. Shena, J. Hizanidis, V. Kovanis, and G. P. Tsironis: *"Turbulent chimeras in large semiconductor laser arrays"*, Scientific Reports **7**, 42116 (2017).

J20. N. E. Kouvaris, J. Hizanidis, A. Díaz-Guilera, and R. J. Requejo: *"Chimeras on a public goods game with destructive agents"*, Chaos **26**, 123108 (2016).

J19. J. Hizanidis, N. Lazarides, and G. Tsironis: *"Robust chimera states in SQUID metamaterials with local interactions"*, Phys. Rev. E **94**, 032219 (2016).

J18. N. Tsigkri-De Smedt, J. Hizanidis, P. Hövel, and A. Provata: *"Multi-Chimera States and Transitions in the Leaky Integrate-and-Fire Model with Excitatory Coupling and Hierarchical Connectivity"*, Eur. Phys. J. Special Topics **225** 1149 (2016).

J17. J. Hizanidis, N. Lazarides, G. Neofotistos, and G. Tsironis: *"Chimera states and synchronization in magnetically driven SQUID metamaterials"*, Eur. Phys. J. Special Topics **225** 1231 (2016).

J16. T. Isele, J. Hizanidis, A. Provata, and P. Hövel : *"Controlling chimera states: The influence of excitable units"*, Phys. Rev. E **93** 022217 (2016).

J15. J. Hizanidis, N. E. Kouvaris, G. Zamora-López, A. Díaz-Guilera, and Chris G. Antonopoulos: *"Chimera-like states in modular neural networks"*, Scientific Reports **6**, 19845 (2016).

J14. J. Hizanidis, N. E. Kouvaris, and Chris G. Antonopoulos: *"Metastable and chimera-like states in the C.elegans brain network"*, Journal Cybernetics and Physics **4**, 17-20 (2015).

J13. J. Hizanidis, E. Panagakou, I. Omelchenko, E. Schöll, P. Hövel, and A. Provata: *"Chimera states in population dynamics: networks with fragmented and hierarchical connectivities"*, Phys. Rev. E **92**, 012915 (2015).

J12. I. Omelchenko, A. Provata, J. Hizanidis, E. Schöll , and P. Hövel: *"Robustness of chimera states for coupled FitzHugh-Nagumo oscillators"*, Phys. Rev. E **91**, 022917 (2015).

J11. A. Vüllings, J. Hizanidis, I. Omelchenko, and P. Hövel: *"Clustered chimera states in Excitable Elements of Type I"*, New J. Phys. **16**, 123039 (2014).

J10. T. Bountis, V. G. Kanas, J. Hizanidis, and A. Bezerianos: *"Chimera states in a Two-Population Network of Coupled Pendulum-Like Elements"*, Eur. Phys. J. Special Topics **223**, 721 (2014).

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J9. J. Hizanidis, V. G. Kanas, A. Bezerianos and T. Bountis: *"Chimera states in networks of Hindmarsh-Rose oscillators"*, Int. J. Bif. Chaos **24**, 1450030 (2014).

J8. P. Katsaloulis, J. Hizanidis, D. A. Verganelakis and A. Provata: *"Complexity measures and noise effects on Diffusion Magnetic Resonance Imaging of the neuron axons network in human brains"*, Fluctuation and Noise Letters **11**, 1250032 (2012).

J7. J. Hizanidis, S. Deligiannids, A. Bogris and D. Syvridis: *"Enhancement of chaos encryption potential by combining all-optical and electro-optical chaos generators"*, IEEE J. Quantum Electron. **46**, 1642 (2010) .

J6. R. Aust, P. Hövel, J. Hizanidis and E. Schöll: *"Delay control of coherence resonance in type-I excitable dynamics"*, Eur. Phys. J. Special Topics **187**, 77 (2010).

J5. J. Hizanidis and E. Schöll: *"Control of coherence resonance in superlattices"*, Phys. Rev. E. **78**, 066205 (2008).

J4. J. Hizanidis, R. Aust and E. Schöll: *"Delay-induced multistability near a global bifurcation"*, Int. J. Bif. Chaos **18**, 1759 (2008).

J3. J. Hizanidis and E. Schöll: *"Control of noise-induced spatiotemporal patterns in superlattices"*, phys. status solidi (c) **5**, 207 (2008).

J2. J. Hizanidis, A. G. Balanov, A. Amann, and E. Schöll: *"Noise-induced front motion: signature of a global bifurcation"*, Phys. Rev. Lett. **96**, 244104 (2006).

J1. J. Hizanidis, A. G. Balanov, A. Amann, and E. Schöll: *"Noise-induced oscillations and their control in semiconductor superlattices"*, Int. J. Bif. Chaos **16**, 1701 (2006).

### Conference Proceedings

C6. N. Tsigkri-De Smedt, J. Hizanidis, P. Hövel, and A. Provata: *"Multi-chimera states in the Leaky Integrate-and-Fire model"*, 4th International Young Scientist Conference on Computational Science, Procedia Computer Science **66**, 13 (2015).

C5. P. Hövel, A. Vüllings, I. Omelchenko, and J. Hizanidis: *"Clustered chimera states in Systems of Type-I Excitability"*, in Proc. European Conference on Complex Systems (ECCS) (2014).

C4. J. Hizanidis, V. G. Kanas, A Bezerianos, T Bountis: *"Existence and control of chimera states in networks of nonlocally coupled models of neuron oscillators"*, in Control Automation Robotics & Vision (ICARCV) (2014).

C3. J. Hizanidis, R. Aust and E. Schöll: *"Delay-induced multistability in a generic model for excitable dynamics"*, in Proc. ASME International Design Engineering Technical Conferences and Computers and Information in Engineering Conference (2007).

C2. E. Schöll and J. Hizanidis: *"Noise-induced current oscillations in superlattices: from stationary to moving domains"*, in Proc. 28th Int. Conference on Physics of Semiconductors (ICPS-28), Vienna 2006 **893**, 543 (2007).

C1. J. Hizanidis, A. G. Balanov, A. Amann, and E. Schöll: *"Control of noise-induced oscillations in superlattices by delayed feedback"*. AIP Conf. Proc. **780**, 41 (2005).

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### Book Chapters

B2. J. Hizanidis, P. Katsaloulis, D. A. Verganelakis and A. Provata: *"Describing the Neuron Axons Network of the Human Brain by Continuous Flow Models"*, Special Volume honoring the memory of Professor John S. Nicolis, "Chaos, Information Processing and Paradoxical Games", World Scientific Publishing Company, edited by G. Nicolis and V. Basios (2014).

B1. E. Schöll, J. Hizanidis, P. Hövel, and G. Stegemann: *"Pattern formation in semiconductors under the influence of time-delayed feedback control and noise"*, in Analysis and control of complex nonlinear processes in physics, chemistry and biology, World Scientific (2007).

## Citations in Scientific Publications

total: 979 (according to Google Scholar)

h-index: 18 (according to Google Scholar)

## Reviewer for the following journals

- Chaos, Solitons and Fractals
- IEEE Journal of Quantum Electronics
- Nonlinear Analysis Series B
- European Physical Journal
- Physics Letters A
- European Journal of Neuroscience
- Complexity

## Organization of Workshops & Conferences

- Symposium in Honor of the 60th Birthday of Giorgos P. Tsironis, June 2019, Chania, Greece.
- Self-organized patterns on complex networks (SOP), Satellite Workshop of the 8th International Scientific Conference on Physics and Control (PhysCon 2017), July 2017, Florence, Italy.
- Self-organized patterns on complex networks (SOP), Satellite Workshop of the 2016 Conference on Complex Systems (CCS'16), September 2016, Amsterdam, Netherlands.
- 5th Ph.D. Summer School & Workshop on Mathematical Modeling of Complex Systems, July 2015, Patras, Greece.
- 4th Ph.D. Summer School & Workshop on Mathematical Modeling of Complex Systems, July 2014, Athens, Greece.
- Chaos Applications in Telecommunications and Sensors, June 2009, Chania, Greece.
- Dynamic Days Europe, July 2005, Berlin, Germany.

## International Collaborations

- Prof. S. Anlage, University of Maryland, USA
- Dr. C. G. Antonopoulos, University of Essex, UK
- Prof. A. Bezerianos, University of Patras, Greece & University of Singapore
- Prof. T. Bountis, University of Patras, Greece
- Dr. P. Hövel, Technische Universität Berlin, Germany
- Prof. V. Kovanis, Virginia Tech College of Engineering, Arlington Virginia, USA
- Dr. N. Lazarides, University of Crete, Greece
- Dr. I. Omelchenko, Technische Universität Berlin, Germany
- Dr. A. Provata, National Center for Scientific Research "Demokritos", Greece
- Prof. Dr. E. Schöll, Technische Universität Berlin, Germany
- Prof. G. Tsironis, University of Crete, Greece
- Dr. G. Zamora-López, Universitat Pompeu Fabra, Spain

## References

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**Prof. Tassos Bountis**

Department of Mathematics

University of Patras, 26500, Greece

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National Center for Scientific Research (NCSR) "Demokritos"
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**Dr. Andreas Amann**
School of Mathematical Sciences
University of Cork, WGB 1-45, Ireland, UK
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