



## **Assoc. Prof. C. Mesaritakis**

**University of West Attica – School of Engineering**

**Dept. Biomedical Engineering**

Ag. Spyridonos 28, 12243, Egaleo-Greece

email: [cmesar@uniwa.gr](mailto:cmesar@uniwa.gr)

---

### **1. OVERVIEW**

Dr. Charis Mesaritakis, Associate Professor, holds a Bachelor's and a Master's degree from the Department of Informatics and Telecommunications and the Department of Physics, respectively, at the National and Kapodistrian University of Athens (NKUA). His Ph.D. thesis, conducted in the Photonics Technology Lab of NKUA's Department of Informatics and Telecommunications, focused on the theoretical and experimental study of mode-locked lasers based on quantum dots for telecommunications and biomedical applications.

He has served as a key researcher in more than 15 European research projects under FP6, FP7, H2020, and Horizon Europe frameworks. In 2013, he received a IEF Marie Curie Fellowship for postdoctoral research at Thales Research Labs (III-V Labs - France), designing pulsed lasers for high-precision telemetry systems. Subsequently, he was awarded two competitive national postdoctoral fellowships from the Giannis Latsis Foundation and HFRI (Hellenic Foundation for Research and Innovation), focusing on photonic and electronic neuromorphic systems for telecommunications and biomedical applications.

Currently, Dr. Mesaritakis serves as the technical manager in two European projects (H2020 NEoteRIC and Horizon PROMETHEUS) dedicated to the development of integrated neuromorphic systems using reconfigurable photonic components and artificial neurons tailored for biomedical applications such as flow cytometry. In 2024, he received an advanced faculty member grant from HFRI to develop neuromorphic systems for physical-layer security applications.

In 2019, he was appointed Associate Professor at the Department of Information and Communication Systems Engineering of the University of the Aegean. In 2025, he joined the Department of Biomedical Engineering at the School of Engineering of the University of West Attica. His teaching portfolio spans a wide range of subjects, including circuit theory, electronic systems, broadband and optical communications, and neuromorphic photonic systems. His research interests focus on designing and experimentally implementing neuromorphic systems for processing biomedical and telecommunication signals and investigating artificial neurons and networks utilizing photonic technology.

Since 2020, Dr. Mesaritakis has been co-founder of the Research Unit on Neuromorphic Computing and Photonics (RNCP) at the University of West Attica. He has authored over 110 peer-reviewed publications in high-impact international journals and conferences on hardware systems for neuromorphic applications, artificial photonic neurons and networks, and quantum dot laser dynamics. He holds two international patents (PCT) on photonic integrated systems for neuromorphic applications and photonic systems for physical-layer security. Dr. Mesaritakis is a reviewer for prestigious journals such as Nature Communications, Nature Photonics, Nature Physics, Communications Engineering, and IEEE, OPTICA, Elsevier, and AIP journals. He has been a member of OPTICA (Optical Society of America) since 2019 and serves as an associate editor for Optics Continuum by OPTICA.

---

## 2. ACADEMIC QUALIFICATIONS

### DOCTORATE (PH.D)

National & Kapodistrian University of Athens, Dept. Informatics and Telecommunications.

Title: «Theoretical and Experimental Investigation of Quantum-Dot Mode-locked Lasers for Telecomm and Biomedical Applications»

### MASTER OF SCIENCE IN MICROELECTRONICS (MSc.)

National & Kapodistrian University of Athens, Dept. Informatics and Telecommunications – Dept. of Physics

### BACHELOR OF SCIENCE (B.Sc.) IN INFORMATICS & TELECOMMUNICATIONS

National & Kapodistrian University of Athens, Dept. Informatics and Telecommunications

---

## 3. AWARDS & FELLOWSHIPS

### EU-MARIE CURIE GRANT FP7-PEOPLE-IEF

2012 (France)

ALCATEL-THALES- III-V Labs

Principal Investigator

NOMOS Project: “Design and realization of semiconductor mode-locked lasers for space-born telemetry and LIDAR applications”

### HFRI – NATIONAL POST-DOCTORAL GRANT

2018 (Greece)

University of the Aegean

Principal Investigator

NEBULA Project: “Experimental and Numerical Investigation of Quantum-Dot based Neuromorphic nodes”

### HFRI – NATIONAL ADVANCED GRANT

2024 (Greece)

University of the Aegean

Principal Investigator

QUASAR Project: “Photonic and electronic Neuromorphic and quantum circuits for physical layer security systems”

---

## 4. ACADEMIC POSITIONS

UNIVERSITY OF WEST ATTICA

Dept. Biomedical Engineering.

Athens, Greece

2025-today

- Associate Professor in Neuromorphic Photonics
- Coordinator HFRI QUASAR (2024-2026)

- Senior Researcher Horizon Europe Research projects: QPIC1550 and ECSTATIC

**UNIVERSITY OF THE AEGEAN**

**Dept. Information and Communication Systems Engineering**

**Samos, Greece**

**2019-2025**

- **Assoc. Professor** in Photonic Circuits and Systems
- Technical Manager H2020 NEoteRIC Project (2020-2024)
- Technical Manager HORIZON PROMETHEUS (2022-2025)
- Principal Investigator HFRI NEBULA (2018-2021).

**NATIONAL & KAPODISTRIAN UNIVERSITY OF ATHENS**

**Dept. Informatics & Telecommunications**

**Athens, Greece**

**2006-today**

- Visiting Professor: Secure Telecommunication Systems and Networks (MSc.)
- Visiting Professor: Integrated Photonics (MSc)
- Senior Researcher 7 FP6-FP7 EU research Projects

**EULAMBIA ADVANCED TECHNOLOGIES LTD.**

**Athens, Greece**

**2017-2018**

- Researcher in H2020 research projects (KONFIDO)

**SCHOOL OF TELECOMMUNICATION AND ELECTRONICS OFFICERS & NKUA)**

**Athens-Greece**

**2012-today**

- Visiting Professor: Computer Networks
- Visiting Professor: Micro-electronics

**ALCATEL-THALES III-V LABS**

**France**

**Paris,**

**2013-2014**

- IEF Marie-Curie Postdoctoral Fellow: NOMOS project

---

## 5. PUBLICATIONS IN PEER-REVIEWED INTERNATIONAL JOURNALS

1. I. Tsilikas, A. Tsigotis, G. Sarantoglou, S. Deligiannidis, A. Bogris, K. Posch, G. van der Branden, C. Mesaritakis, "Photonic Neuromorphic Preprocessing for Event-Based Imaging Flow Cytometry" submitted for publication, **Nature Scientific Reports**, doi.org/10.1038/s41598-024-75667-9 (2024)
2. A. Tsigotis, G. Sarantoglou, S. Deligiannidis, E. Sanchez, A. Gutierrez, A. Bogris, J. Capmany, C. Mesaritakis, "Photonic Neuromorphic Accelerator for Convolutional Neural Networks based on an

- Integrated Reconfigurable Mesh” accepted for publication to **Nature Communication Engineering**, arXiv:2405.06434 (2024)
3. D. Dermanis, P. Rizomiliotis, A. Bogris, C. Mesaritakis, “Pseudo-Random Generator based on a Photonic Neuromorphic Physical Unclonable Function” **IEEE Journal of Quantum Electronics**, 10.1109/JQE.2024.3471951 (2024)
  4. K. Sozos, S. Deligiannidis, C. Mesaritakis, A. Bogris, “Unconventional Computing based on Four Wave Mixing in Highly Nonlinear Waveguides” accepted for publication to **IEEE Journal of Quantum Electronics**, arXiv:2402.09135 (2024)
  5. G. Sarantoglou, A. Bogris, C. Mesaritakis, “All-Optical, Reconfigurable and Power Independent Neural Activation Function by Means of Phase Modulation” **IEEE Journal of Quantum Electronics**, 10.1109/JQE.2024.3437353 (2024)
  6. K. Sozos, S. Deligiannidis, G. Sarantoglou, C. Mesaritakis, A. Bogris, “Recurrent Neural Networks and Recurrent Optical Spectrum Slicers as Equalizers in High Symbol Rate Optical Transmission Systems” (invited) submitted to **IEEE Journal of Lightwave Technology** (2024)
  7. S. Deligiannidis, R. H. Kyle, K. Sozos, C. Mesaritakis, P. Petropoulos, A. Bogris “Multichannel Nonlinear Equalization in Coherent WDM Systems based on Bi-directional Recurrent Neural Networks” **IEEE Journal of Lightwave Technology**, vol. 42, no. 2, pp. 541-549, doi: 10.1109/JLT.2023.3318559 (2024)
  8. M. Skontranis, G. Sarantoglou, K. Sozos, T. Kamalakis, C. Mesaritakis and A. Bogris, “Multimode Fabry-Perot Laser as a Reservoir Computing and Extreme Learning Machine Photonic Accelerator”, **IOP Neuromorphic Computing and Engineering**. <https://doi.org/10.1088/2634-4386/ad025b> (2023)
  9. K. Sozos, S. Deligiannidis, C. Mesaritakis, A. Bogris. “Self-Coherent Receiver Based on a Recurrent Optical Spectrum Slicing Neuromorphic Accelerator” **IEEE Journal of Lightwave Technology**, 10.1109/JLT.2023.3235278 (2023)
  10. K. Sozos, S. Deligiannidis, G. Sarantoglou, C. Mesaritakis, A. Bogris “Recurrent Neural Networks and Recurrent Optical Slicers as Equalizers in High Baud Rate Optical Transmission Systems” (invited) **IEEE Journal of Lightwave Technology**, 10.1109/JLT.2023.3282999 (2023)
  11. A. Tsirigotis, G. Sarantoglou, M. Skontranis, S. Deligiannidis, K. Sozos, G. Tsilikas, D. Dermanis, A. Bogris, C. Mesaritakis. “Unconventional Integrated Photonic Accelerators for High-Speed Convolutional Neural Networks”. (invited) **Science, Intelligence Computing** DOI: 10.34133/icomputing.00 (2023)

12. K. Sozos, A. Bogris, G. Sarantoglou, P. Bienstman, C. Mesaritakis, “High-Speed Photonic Neuromorphic Computing Using Recurrent Optical Spectrum Slicing Neural Networks” 1:(24) doi.org/10.1038/s44172-022-00024-5 **Nature Communication Engineering**, (2022)
13. A. Bogris, T. Nikas, C. Simos, I. Simos, K. Lentas, N. S. Melis, A. Fichtner, D. Bowden, K. Smolinski, C. Mesaritakis & I. Chochliouros. “Sensitive seismic sensors based on microwave frequency fiber interferometry in commercially deployed cables”. **Nature Scientific Reports** 12, 14000 (2022)
14. G. Sarantoglou, A. Bogris, C. Mesaritakis, S. Thodoridis, “Bayesian Photonic Accelerators for Energy Efficient and Noise Robust Neural Processing” (invited) **IEEE Selected Topics in Quantum Electronics**, 10.1109/JSTQE.2022.3183444 (2022)
15. D. Dermanis, A. Bogris, P. Rizomiliotis, C. Mesaritakis, “Photonic Physical Unclonable Function based on an Integrated Neuromorphic schemes” **IEEE Journal of Lightwave Technology** 10.1109/JLT.2022.3200307 (2022)
16. M. Skontranis, G. Sarantoglou, A. Bogris, C. Mesaritakis, “Time-Delayed Reservoir Computing Based on Dual-Waveband Quantum-Dot Spin-Polarized Vertical Cavity Surface-Emitting Laser” **Optica Material Optics Express**, 12(10), 4047-4060 (2022)
17. Y. Hong, S. Deligiannidis, N. Taengnoi, K. R. H. Bottrill, N. K. Thipparapu, Y. Wang, J. K. Sahu, David J. Richardson, C. Mesaritakis, A. Bogris, and P. Petropoulos, “ML-assisted Equalization for 50-Gb/s/  $\lambda$  O-band CWDM Transmission over 100-km SMF” **IEEE Selected Topics in Quantum Electronics** 10.1109/JSTQE.2022.3155990 (2022).
18. G. Sarantoglou, M. Skontranis, A. Bogris, C. Mesaritakis, “Experimental study of Neuromorphic Node based on a Multi- Waveband Emitting two - section Quantum Dot Laser” **Optica Photonic Research**, Vol. 9, No. 4 pp. B87 doi: 10.1364/PRJ.413371 (2021)
19. M. Skontranis, G. Sarantoglou, S. Deligiannidis, A. Bogris, C. Mesaritakis, “Unsupervised Image Classification Through Time-Multiplexed Photonic Multi-Layer Spiking Convolutional Neural Network” **Appl. Sci.** 2021, 11(4) (2021)
20. K. Sozos, C. Mesaritakis, A. Bogris “Reservoir Computing Based on Mutually Injected Phase Modulated Semiconductor Lasers as a Monolithic Integrated Hardware Accelerator” **IEEE Journal of Quantum Electronics** vol. 57, no. 5, pp. 1-7, Oct. 2021
21. S. Deligiannidis, C. Mesaritakis, A. Bogris, “Performance and Complexity Analysis of bi-directional Recurrent Neural Network Models vs. Volterra Nonlinear Equalizers in Digital Coherent Systems.” **IEEE Journal of Lightwave Technology** Vol.39, No.18 pp. 5791 (2021)

22. A. Bogris, C. Mesaritakis, Stavros Deligiannidis, Pu Li "Fabry-Perot Lasers as Enablers for Parallel Reservoir Computing", **IEEE Selected Topics in Quantum Electronics**, Vol. 27, No.2 (2020)
23. C. Mesaritakis, P. Rizomiliotis, M. Akriotou, C. Chaintoutis, A. Fragkos, D. Syvridis "Photonic Pseudo-Random Number Generator for Internet-of-Things Authentication using a Waveguide based Physical Unclonable Function" **Arxiv.org** (2020)
24. S. Deligiannidis, A. Bogris, C. Mesaritakis, Y. Kopsinis, "Compensation of Fiber Nonlinearities in Digital Coherent Systems Leveraging Long Short-Term Memory Neural Networks" **IEEE Journal of Lightwave Technology**, 38(21) 5991-5999 (2020)
25. G. Sarantoglou, M. Skontranis, C. Mesaritakis, "All Optical Integrate and Fire Neuromorphic Node based on Single Section Quantum Dot Laser" **IEEE Selected Topics in Quantum Electronics**, vol. 26, no. 5, pp. 1-10 (2020)
26. C. Mesaritakis, D. Syvridis, "Reservoir Computing based on Transverse Modes in a Single Optical Waveguide" **Optica Optics Letters** 44 (6) 1218-1221 (2019)
27. C. Chaintoutis, M. Akriotou, C. Mesaritakis, I. Komnios, D. Karamitros, A. Fragkos, D. Syvridis, "Optical PUFs as physical root of trust for blockchain-driven applications" **IET Software** IET Software 13.3 (2019): 182-186
28. C. Mesaritakis, M. Akriotou, A. Kapsalis, E. Grivas, C. Chaintoutis, T. Nikas, D. Syvridis, "Physical Unclonable Function based on a Multi-Mode Optical Waveguide" **Nature Scientific Reports** 8, 9653 (2018)
29. C. Mesaritakis, A. Kapsalis, A. Bogris, D. Syvridis "Artificial Neuron based on Quantum Dot Mode Locked Laser" **Nature Scientific Reports**, 6, 39317 (2016)
30. C. Mesaritakis, A. Bogris, A. Kapsalis, D. Syvridis "High-Speed All-Optical Pattern Recognition of Fourier Dispersive Images Through a Photonic Reservoir Computing Subsystem" **Optica, Optics Letters** 40(14) 3416-3419 (2015)
31. C. Weber, L. Dziewietzki, M. Rossetti, T. Xu, P. Bardella, H. Simos, C. Mesaritakis, M. Ruiz, I. Krestnikov, D. Livshits, M. Krakowski, D. Syvridis, I. Montrosset, E. U. Rafailov, W. Elsasser, S. Breuer, "Picosecond pulse amplification up to a peak power of 42 W by a quantum-dot tapered optical amplifier and a mode-locked laser emitting at 1.26  $\mu\text{m}$ " **Optica, Optics Letters**, Vol. 2 pp-395-398 (2015)
32. H. Simos, C. Simos, C. Mesaritakis, D. Syvridis, "Amplitude and Timing Noise in a Noncolliding Passively Mode-Locked Quantum Dot Laser" **IEEE Photon. Technol. Lett.** 27,(5), 506-509 (2015)
33. C. Simos, H. Simos, C. Mesaritakis, A. Kapsalis, "Pulse and noise properties of a two section passively mode-locked quantum dot laser under long delay feedback" **Elsevier Optics Communication** 313, pp.248-255 (2014)
34. C. Mesaritakis, A. Kapsalis, M. Krakowski, I. Krestnikov, D. Syvridis "Tapered InAs/InGaAs Quantum-dot Semiconductor Optical Amplifier Design for Enhanced Gain and Beam Quality" **Optica, Optics Letters**, Vol. 38, No. 14, pp. 2404-2406 (2013)

35. C. Mesaritakis, V. Papataksiarhis, D. Syvridis “Micro Ring Resonators as Building Blocks for an All-Optical High-Speed Reservoir Computing Bit-Pattern Recognition System” **Optica, JOSA-B** Vol. 30 No. 11 pp. 3048-3055 (2013)
36. H. Simos, M. Rossetti, C. Simos, C. Mesaritakis, T. Xu, P. Bardella, I. Montrosset, D. Syvridis, “Numerical analysis of passively mode-locked quantum-dot lasers with absorber section at the low-reflectivity output facet” **IEEE Journal of Quantum Electronics**, Vol.49 No. 1, pp. 3-10, (2013)
37. N. V. Kryzhanovskaya, A. E. Zhukov, A. M. Nadtochy, M. V. Maximov, E. I. Moiseev, M. M. Kulagina, A. V. Savelev, E. M. Arakcheeva, A. A. Lipovskii, F. I. Zubov, A. Kapsalis, C. Mesaritakis, D. Syvridis, A. Mintairov, D. Livshits, “Room-temperature lasing in microring cavities with an InAs/InGaAs quantum-dot active region” **Elsevier Semiconductors** Volume 47, Issue 10, pp 1387-1390 (2013)
38. C. Mesaritakis, C. Simos, H. Simos, I. Krestnikov, D. Syvridis “External Optical Feedback-Induced Wavelength Selection and Q-switching Elimination in an InAs/InGaAs Passively Mode Locked Quantum Dot Laser” **Optica, Journal of Optical Society of America - B** Vol. 29, No. 5, pp. 1071-1077 (2012)
39. C. Mesaritakis, C. Simos, H. Simos, A. Kapsalis, E. Roditi, D. Syvridis, I. Krestnikov, “Effect of the Number of Quantum Dot Layers and Dual State Emission on the Performance of InAs/InGaAs Passively Mode-Locked Lasers”, **AIP Applied Physics Letters** Vol.101, 25 pp. 251115 (2012)
40. A. Kapsalis, I. Stamataki, C. Mesaritakis, D. Syvridis, M. Hamacher, H. Heidrich, “Design and Experimental Evaluation of Active-Passive Integrated Micro-Ring Lasers: Noise Properties”, **IEEE Journal of Quantum Electronics**, Vol. 48 No. 2 pp. 99-106 (2012)
41. A. Kapsalis, I. Stamataki, C. Mesaritakis, D. Syvridis, M. Hamacher, H. Heidrich, “Design and Experimental Evaluation of Active-Passive Integrated Micro-Ring Lasers: Threshold Current and Spectral Properties”, **IEEE Journal of Quantum Electronics**, Vol. 48 No. 2 pp. 99-106 (2012)
42. Y. Ding, R. Aviles-Espinosa, M. A. Cataluna, D. Nikitichev, M. Ruiz, M. Tran, Y. Robert, A. Kapsalis, H. Simos, C. Mesaritakis, T. Xu, P. Bardella, M. Rossetti, I. Krestnikov, D. Livshits, Ivo Montrosset, D. Syvridis, M. Krakowski, P. Loza-Alvarez, and E. Rafailov, “High peak-power picosecond pulse generation at 1.26  $\mu\text{m}$  using a quantum-dot-based external-cavity mode-locked laser and tapered optical amplifier” **Optica, Optics Express** Vol. 20 No. 13, pp. 14308-14320 (2012)
43. Y. Ding, A. Alhazime, D. Nikitichev, K. Fedorova, M. Ruiz, M. Tran, Y. Robert, A. Kapsalis, H. Simos, C. Mesaritakis, T. Xu, P. Bardella, M. Rossetti, I. Krestnikov, D. Livshits, I. Montrosset, D. Syvridis, M. A. Cataluna, M. Krakowski, E. Rafailov, “Tunable master-oscillator power-amplifier based on chirped quantum-dot structures” **IEEE Photon. Technol. Lett.** Vol. 24, No. 20, pp. 1841-1844 (2012)
44. H. Simos, C. Simos, C. Mesaritakis, D. Syvridis, “Two Section Quantum Dot Mode-Locked Lasers under Optical Feedback: Pulse Broadening and Harmonic Operation” **IEEE Journal of Quantum Electronics** vol.48, no.7, pp.872-877, (2012)

45. C. Mesaritakis, A. Argyris, C. Simos, H. Simos, A. Kapsalis, D. Syvridis “Chaotic emission and tunable self-sustained pulsations in a two-section Fabry–Perot quantum dot laser” **AIP: Applied Physics Letters** Vol. 98, 051104 (2011)
46. C. Mesaritakis, C. Simos, H. Simos, D. Syvridis, “Dual ground-state pulse generation from a passively mode-locked InAs/InGaAs quantum dot laser” **AIP: Applied Physics Letters** Vol. 99, 141109 (2011)
47. C. Mesaritakis, A. Argyris, E. Grivas, D. Syvridis “Adaptive Interrogation for Fast Optical Sensing Based on Cascaded Micro-Ring Resonators” **IEEE Sensors Journal**, Vol. 11, No.7 pp.1595-1601 (2011)
48. C. Mesaritakis, C. Simos, H. Simos, S. Mikroulis, I. Krestnikov, D. Syvridis “Pulse Width Narrowing due to Dual Ground State Emission in Quantum Dot Mode Locked Lasers” **AIP: Applied Physics Letters** Vol. 96 May (2010)
49. C. Mesaritakis, C. Simos, H. Simos, S. Mikroulis, I. Krestnikov, E. Roditi, D. Syvridis “Effect of feedback to the Ground and Excited State of a Quantum dot passively mode locked Laser” **AIP: Applied Physics Letters** Vol. 97 August (2010)
50. M. A. Cataluna, D. I. Nikitichev, S. Mikroulis, H. Simos, C. Simos, C. Mesaritakis, D. Syvridis, I. Krestnikov, D. Livshits, and E. U. Rafailov, “Dual-wavelength mode-locked quantum-dot laser, via ground and excited state transitions: experimental and theoretical investigation”, **Optica, Optics Express**, vol. 18, pages 12832-12838, (2010)
51. C. Mesaritakis, H. Simos, A. Kapsalis and D. Syvridis, “Optical microring based interrogation method for phase detecting elements”, **IEEE Sensors Journal**, vol. 9, December (2009)
52. H. Simos, C. Mesaritakis, D. Alexandropoulos, and D. Syvridis, “Dynamic analysis of crosstalk performance in microring based add/drop filters”, **IEEE/OSA Journal of Lightwave Technology**, vol. 27, pages 2027-2034, (2009).
53. H. Simos, C. Mesaritakis, D. Alexandropoulos, and D. Syvridis, "Intra-band Crosstalk Properties of Add/Drop Filters Based on Active Microring Resonators", **IEEE Photon. Technol. Letters**, vol. 19, pages 1649-1651, (2007).

---

## 6. BOOK CHAPTERS

1. C. Mesaritakis, D. Syvridis, “Spectral Splitting Effects and Their Influence on the Performance of Quantum Dot Mode-Locked Lasers”, **Springer**, “Quantum Dot Devices - Lecture Notes in Nanoscale Science and Technology”, Vol. 13 (2012)
2. M. Akriotou, C. Mesaritakis, A. Kapsalis, E. Grivas, C. Chaintoutis, A. Fragkos, D. Syvridis, “Random Number Generation from a Secure Unclonable Hardware Module” **Springer**, Communications in Computer and Information Science Vol. 821, (2018)



3. C. Mesaritakis et al, "Secure Cross-Border Exchange of Health Related Data: The KONFIDO Approach" **Springer**, Internet and Distributed Computing Systems, DOI: 10.1007/978-3-030-34914-1\_30 (2019)
- 

## 7. PATENTS

1. C. Mesaritakis, D. Syvridis " Photonic Physical Unclonable Function based on Multi-Mode Optical Waveguides" **GR patent** submitted on 26/7/2017 **Granted Ref. Number: 2017- 02623**
  2. C. Mesaritakis, D. Syvridis " Photonic Physical Unclonable Function based on Multi-Mode Optical Waveguides" **PCT patent Ref. Number: PCT/IB2018/055546**
  3. C. Mesaritakis, A. Bogris, P. Bienstman, "Photonic Integrated device for Signal Processing" Ref. Number **EPO/PCT Ref. Number: EP21195873.1**
- 

## 8. PUBLICATIONS IN PEER-REVIEWED INTERNATIONAL CONFERENCES

1. A. Tsirigotis, G. Sarantoglou, S. Deligiannidis, A. Bogris, E. Sanchez, A. Gutierrez, J. Capmany, C. Mesaritakis, "Neuromorphic Accelerator based on Reconfigurable Photonic Chip for high-speed Image Processing" **ECOC Frankfurt Germany 2024**
2. K. Sozos, F. Da Ros, M. P. Yankov, S. Deligiannidis, G. Sarantoglou, C. Mesaritakis, A. Bogris "Experimental Investigation of a M-QAM Receiver Based on Recurrent Optical Spectrum Slicing and Direct Detection" **ECOC Frankfurt Germany 2024**
3. C. Mesaritakis et al, "An efficient highly secure AI-based system for incident management for critical infrastructures" **IEEE IST - 2024**
4. K. Sozos, F. Da Ros, Metodi Yankov Stavros Deligiannidis, G. Sarantoglou, C. Mesaritakis and A. Bogris, "Recurrent Optical Spectrum Slicing Receiver for Intensity Modulation/Direct Detection systems using Programmable Photonics" **IPC-2024 (2024)**
5. C. Mesaritakis, I. Tsilikas, S. Deligiannidis, G.A. Karydis, D. Syvridis, A. Bogris "Dual-modality High-flow Imaging Scheme for cell discrimination combining neuromorphic 2D camera and NIR time-stretch imager" **PSHI- 2024 Athens Greece (2024)**

6. C. Mesaritakis, A. Tsilikas, A. Tsigiriotis, C. Posch, G. Branden, A. Bogris, “Neuromorphic Photonic Spectrum Slicing as a Convolutional Accelerator for Imaging Cytometry” **(invited) IEEE Summer topical meetings** – Sicily 2023
7. A. Bogris, K. Sozos, G. Sarantoglou, C. Mesaritakis “Neuromorphic computing by means of recurrent spectrum slicing for next generation high baud rate transmission systems” **(invited) IEEE Summer topical meetings** – Sicily 2023
8. I. Tsilikas, S. Deligiannidis, A. Tsigiriotis, G. N. Tsigaridas, A. Bogris, C. Mesaritakis, “Neuromorphic Camera Assisted High-Flow Imaging Cytometry for Particle Classification” **CLEO, Europe** – Munich 2023
9. I. Tsilikas, A. Tsigiriotis, S. Deligiannidis, G. N. Tsigaridas, A. Bogris, C. Mesaritakis, “Time-Stretched Imaging Flow Cytometry and Photonic Neuromorphic Processing for Particle Classification” **CLEO, Europe** – Munich 2023
10. A. Tsigiriotis, I. Tsilikas, K. Sozos, A. Bogris, C. Mesaritakis, “Photonic Neuromorphic Accelerator Combined with an Event-Based Neuromorphic Camera for High-Speed Object Classification” **CLEO, Europe** – Munich 2023
11. S. Deligiannidis, N. Argyris, S. Dris, D. Kalavrouziotis, P. Bakopoulos, C. Mesaritakis, A. Bogris, “Deep-Learning-based VCSEL transmitter emulator” **CLEO, Europe** – Munich 2023
12. K. Sozos, S. Deligiannidis, C. Mesaritakis, A. Bogris, “Unconventional Computing based on Four Wave Mixing in Highly Nonlinear Media” **CLEO, Europe** – Munich 2023
13. C. Mesaritakis, G. Sarantoglou, A. Bogris “Bayesian Training in Reconfigurable Photonic Neuromorphic Meshes”, **(invited) IEEE Workshop on Complexity in Engineering (COMPENG)**, Florence-Italy (2022)
14. M. Skontranis, G. Sarantoglou, A. Bogris, C. Mesaritakis “Spectro-temporally Multiplexed Reservoir Computing Based on a Multimode Fabry Perot Laser” **ECOC Basel** – Switzerland 2022
15. A. Bogris, K. Sozos, S. Deligiannidis, G. Sarantoglou, C. Mesaritakis, “Machine Learning and Neuromorphic Computing Approaches for the mitigation of transmission impairments in high baud rate transmission systems,” **ECOC 2022** (Invited)
16. G. Sarantoglou, K. Sozos, T. Kamalakis, C. Mesaritakis, A. Bogris, “Experimental demonstration of an extreme learning machine based on Fabry Perot lasers for parallel neuromorphic processing” **OFC 2022**, San Francisco USA

17. A. Tsirigotis, I. Tsilikas, K. Sozos, A. Bogris, C. Mesaritakis “Filter-Based Photonic Reservoir Computing as a key-enabling platform for all-optical high-speed processing of time-stretched images and telecomm data” **(invited) SPIE Photonics West**, 120190G, doi.org/10.1117/12.2607438, AI and Optical Data Sciences III, San Francisco USA 24-26 February 2022.
18. A. Bogris, T. Nikas, C. Simos, I. Simos, K. Lentas, N. S Melis, A. Fichtner, D. C Bowden, K. T Smolinski, C. Mesaritakis, “Microwave Frequency Fiber Interferometry (MFFI): A Promising Technique for Earthquake detection in Commercially Deployed Cables” **AGU Fall Meeting Abstracts**, S16A-01 (2022)
19. K. Sozos, A. Bogris, P. Bienstman, C. Mesaritakis, “Photonic Reservoir Computing based on Optical Filters in a Loop as a High Performance and Low-Power Consumption Equalizer for 100 Gbaud Direct Detection Systems” **ECOC, Bordeaux France 2021**
20. C. Mesaritakis, Adonis Bogris “Neuromorphic Schemes for Next-Generation Telecommunication and Security Applications” **(invited) ECOC 2021, Bordeaux France 2021**
21. A. Bogris, K. Sozos, A. Tsirigotis, C. Mesaritakis, “Neuromorphic Integrated Photonics as Hardware Accelerators for Ultra-high Speed Telecom and Imaging Applications” **Photonics in Switching and Computing, OSA Virtual Conference (invited) (2021)**
22. M. Skontranis, G. Sarantoglou, A. Bogris, C. Mesaritakis, “Photonic Spiking Convolutional Neural Networks for High-Speed Image Processing” **(Invited) IEEE Summer Topical Meetings 2021** 19-21 July Virtual Conference (2021)
23. C. Mesaritakis, K. Sozos, D. Dermanis, A. Bogris, “Spatial Photonic Reservoir Computing based on Non-Linear Phase-to-Amplitude Conversion in Micro-Ring Resonators” **OFC USA 2021**
24. K. Sozos, C. Mesaritakis, A. Bogris, “Reservoir Computing based on Mutually Injected Phase Modulated Lasers: A monolithic integration approach suitable for short-reach communication systems”, **OFC USA 2021**
25. Y. Hong; S. Deligiannidis; N. Taengnoi; K. Bottrill; N. Thipparapu; Y. Wang; J. Sahu; D. Richardson; C. Mesaritakis; A. Bogris; P. Petropoulos, «Performance-enhanced Amplified O-band WDM Transmission using Machine Learning based Equalization» **CLEO San Hose-USA (2021)**,
26. G. Sarantoglou, M. Skontranis, A. Bogris, C. Mesaritakis, “Resonate and Fire Neuromorphic Node based on two - section Quantum Dot Laser with multi-waveband dynamics” **ECOC-CLEO, Brussels (2020)**
27. Stavros Deligiannidis, Charis Mesaritakis, Adonis Bogris, “Performance and Complexity Evaluation of Recurrent Neural Network Models for Fibre Nonlinear Equalization in Digital Coherent Systems” **ECOC-CLEO, Brussels (2020)**

28. C. Mesaritakis, M. Skontranis, G. Sarantoglou, A. Bogris, “Micro-Ring-Resonator Based Passive Photonic Spike-Time- Dependent-Plasticity Scheme for Unsupervised Learning in Optical Neural Networks” **OFC USA** – San Diego, March (2020)
29. G. Sarantoglou, M. Skontranis, A. Bogris, C. Mesaritakis, “Temporal Resolution Enhancement in Quantum-Dot Laser Neurons due to Ground State Quenching Effects” **OFC USA** – San Diego, March (2020)
30. C. Mesaritakis, “Photonic Reservoir Computing based on the Random-Interaction of Transverse Optical Modes in Large-Cross Section Waveguides” **CLEO/EQEC Europe**, Munich-Germany (2019)
31. M. Skontranis, G. Sarantoglou, C. Mesaritakis, “Inhibitory Integrate and Fire Neuron based on Quantum-Dot Intra-Band Transitions in a Semiconductor Laser” **CLEO/EQEC Europe**, Munich-Germany (2019)
32. M. Skontranis, G. Sarantoglou, C. Mesaritakis, “All-optical Inhibitory Integrate and Fire Neuron based on a Single-Section Quantum-Dot Semiconductor Laser” **CLEO USA**, San-Diego California USA (2019)
33. C. Mesaritakis, M. Akriotou, D. Syvridis, “Laser Induced Speckle as a Foundation for Physical Security and Optical Computing” **IEEE PSC2018** Photonics in Switching and Computing, Limassol Cyprus (2018)
34. D. Syvridis, C. Mesaritakis, “Quantum-Dot Laser Assisted Spiking Neural Networks” **IEEE International Conference in Laser Optics (ICLO)**, - Invited – St. Petersburg Russia (2018).
35. C. Mesaritakis, M. Akriotou, A. Kapsalis, E. Grivas, C. Chaintoutis, A. Fragkos, D. Syvridis, “Random Number Generation from a Secure Unclonable Hardware Module” **ISCIS Security** Workshop, 26-27<sup>th</sup> February, Imperial College London (2018)
36. J. Rasmussen, P. Natsiavas, K. Votis, K. Moschou, P. Campegnani, L. Coppolino, I. Cano, D. Marí, G. Faiella, O. Stan, O. Abdelrahman, M. Nalin, I. Baroni, M. Voss-Knude, V.A. Vella, E. Grivas, C. Mesaritakis, J. Dumortier, J. Petersen, D. Tzovaras, L. Romano, I. Komnios and V. Koutkias, “Gap Analysis for Information Security in Interoperable Solutions at a Systemic Level: The KONFIDO Approach”, in IFMBE Proceedings of the Int. Conf. on Biomedical and Health Informatics, Thessaloniki, Greece, November 18-21, 2017, **Springer-Verlag** Berlin Heidelberg, 2017 (in press)
37. D. Syvridis, C. Mesaritakis, “Neuromorphic Photonics based on Quantum-Dot Devices”, **Control of Self-Organizing Nonlinear Systems**, Wittenberg-Germany - Invited - (2017)

38. C. Mesaritakis, “All-Optical Excitability of an Inhibitory Neuron based on Two-Section InAs/InGaAs Quantum Dot Mode-Locked Laser” **CLEO Europe/EQEC 2017** Munich-Germany (2017)
39. C. Mesaritakis, M. Akriotou, E. Grivas, D. Syvridis “Cryptographic Key Generation from a Photonic Physical Unclonable Function based on High-Order Transverse Modes” **KES-IIMSS** Algarve-Portugal (2017).
40. C. Mesaritakis, A. Kapsalis, M. Akriotou, D. Syvridis “Physical Unclonable Functions as Key Generator for Cryptographic Applications”, **3rd International Conference on Cyber Security CryCybiW** Athens-Greece (2016)
41. C. Mesaritakis, A. Kapsalis, D. Syvridis “All-Optical Reservoir Computing system based on InGaAsP Ring Resonators for High-Speed Identification and Optical Routing in Optical Networks” **SPIE Photonics West**, San Francisco USA, (2015)
42. A. Kapsalis, C. Mesaritakis, D. Syvridis “Converting mid-infrared signals to near-infrared through optomechanical transduction” **SPIE Photonics West**, San Francisco USA, (2015)
43. C. Mesaritakis, A. Bogris, D. Syvridis, “All optical Dual-Wavelength Switching and Injection Locking of InAs/InGaAs Passively Mode-Locked Quantum Dot Fabry-Perot Lasers” **CLEO CB-P** Munich Germany (2015)
44. C. Mesaritakis, D. Syvridis “Optical Pattern Recognition System based on Reservoir Computing Scheme Using Micro-Ring Resonators as Building Blocks” **EUROPTRODE XII**, Athens Greece April (2014)
45. C. Mesaritakis, A. Kapsalis, D. Syvridis, “Silicon-on-Insulator Microring Resonator All-Optical Reservoir Computing Scheme for High-Speed Applications” Conference: **IEEE International Conference on group IV Photonics**, At Cité Internationale Universitaire de Paris, Paris France (2014)
46. C. Mesaritakis, A. Kapsalis, C. Simos, H. Simos, M. Krakowski, and D. Syvridis “Optimized InAs/AlGaAs Quantum Dot Semiconductor Optical Amplifier Tapered Geometry For Enhanced Beam Quality and Optical Gain” **CLEO** 2013 May – Munich Germany
47. L. Drzewietzki, S. Breuer, M. Rossetti, T. Xu, P. Bardella, H. Simos, C. Mesaritakis, M. Ruiz, I. Krestnikov, D. Livshits, M. Krakowski, D. Syvridis, I. Montrosset, E. Rafailov, and W. Elsaßer, “Picosecond pulse generation with 34W peak power using a monolithic quantum-dot tapered mode-locked laser and tapered optical amplifier” **CLEO** 2013 May – Munich Germany
48. H. Simos, C. Simos, C. Mesaritakis, D. Syvridis “Numerical Investigation of Timing Jitter in Passively Mode Locked Quantum Dot Lasers with Anti-Colliding Design” **IS-PALD**, Paris-France (2013)

49. C. Simos, H. Simos, C. Mesaritakis, D. Syvridis “Two Section Quantum Dot Mode Locked Lasers under Long Optical Feedback: Pulse Noise and Jitter Dynamics” **IS-PALD**, Paris – France (2013)
50. Y. Ding, M. A. Cataluna, D. Nikitichev, M. Ruiz, M. Tran, Y. Robert, A. Kapsalis, H. Simos, C. Mesaritakis, T. Xu, P. Bardella, M. Rossetti, I. Krestnikov, D. Livshits, I. Montrosset, D. Syvridis, M. Krakowski, E. Rafailov “Tunable Master-Oscillator Power Amplifier Using All Chirped Quantum-Dot Structures” **CLEO** 2012 San Jose, USA
51. Y. Ding, M. A. Cataluna, D. Nikitichev, M. Ruiz, M. Tran, Y. Robert, A. Kapsalis, H. Simos, C. Mesaritakis, T. Xu, P. Bardella, M. Rossetti, I. Krestnikov, D. Livshits, I. Montrosset, D. Syvridis, M. Krakowski, E. Rafailov “30-W Peak Power Generated from All-quantum-dot Master-oscillator Power-amplifier System for Nonlinear Bio-imaging Applications” **CLEO** 2012 San Jose, USA
52. A. E. Zhukov, N. V. Kryzhanovskaya, A. V. Savelyev, A. M. Nadtochiy, E. M. Arakcheeva, F. I. Zubov, V. V. Korenev, M. V. Maximov, Y. M. Shernyakov, M. M. Kulagina, I. A. Slovinskiy, D. A. Livshits, A. Kapsalis, C. Mesaritakis, D. Syvridis, A. M. Mintairov, “Quantum dot lasers and relevant nanoheterostructures” **SPIE, Semiconductor Lasers and Applications V**, Beijing, China, November 05, (2012)
53. A. E. Zhukov, N. V. Kryzhanovskaya, A. V. Savelyev, A. M. Nadtochiy, E. M. Arakcheeva, F. I. Zubov, V. V. Korenev, M. V. Maximov, Y. M. Shernyakov, M. M. Kulagina, I. A. Slovinskiy, D. A. Livshits, A. Kapsalis, C. Mesaritakis, D. Syvridis, A. M. Mintairov, “Quantum dot lasers and relevant nanoheterostructures” **SPIE, Progress in Biophotonics**, Beijing, China, November 05, (2012)
54. A. Kapsalis, H. Simos, C. Mesaritakis and D. Syvridis, "Optical Microring resonators for telecom sensing and metrology applications: Theory, Design and Experimental Results", **5th International Conference on Micro-Nanoelectronics, Nanotechnologies and MEMS** (Micro & Nano 2012), Heraklion, Crete, October (2012).
55. A. Kapsalis, C. Mesaritakis and D. Syvridis “Active-Passive Integrated Microring Lasers”, **ECLW** September, Lausanne Switzerland. (2011)
56. C. Mesaritakis, H. Simos, A. Kapsalis, D. Syvridis " Micro Ring Biochemical Sensor Based on Fano Resonances and Nanoslot Waveguides" **EOS annual meeting TOM1 Biophotonics** Paris France September (2008).

---

## 9. INVITED TALKS IN INTERNATIONAL CONFERENCES

1. C. Mesaritakis, “Reconfigurable Silicon Photonics Platform for the implementation of Novel Neuromorphic Schemes” **IEEE Microwave-Photonics** Nanjing – China 2023

2. C. Mesaritakis, “Neuromorphic Engineering for Biomedical Applications” **National Conference of Medical Physics**, Athens – Greece 2023
  3. C. Mesaritakis, “Spatial Reservoir Computing, the spectrum slicer accelerator paradigm” **Mini-Symposium Integrated photonic reservoir computing for telecom applications** organized by IMEC, Belgium 2023
  4. C. Mesaritakis, “Photonic Integrated Accelerators based on spectro-temporal Processing for Telecom and Machine-Vision Applications” **2<sup>nd</sup> Workshop on Neuromorphic Photonics**, Athens-Greece 2021
  5. C. Mesaritakis “Spatial reservoir computing based on a reconfigurable neuromorphic platform for high speed signal processing” **1st Workshop on Neuromorphic Photonics**, Thessaloniki-Greece 2021
  6. C. Mesaritakis “Neuromorphic Photonic Circuits as an enabling technology for near future high-speed optical links” **JWOC 2021, Paris-SanClay France** (2021)
  7. C. Mesaritakis “Passive Photonic Components as Building Blocks for Ultra-Fast Reservoir Computing and as Photonic Spike Dependent Plasticity Enabling Structures” **ERC International Workshop – Invited - Photonic Reservoir Computing and Information Processing in Complex Networks, Trento-Italy** (2019)
- 

## 10. SUPERVISION OF PH.D CANDIDATES

### Main Supervisor

1. George Sarantoglou (University of the Aegean) thesis title “Photonic Components for Neuromorphic Engineering” (2024 - graduated)
2. Menelaos Skontranis (University of the Aegean) thesis title “Photonic Reservoir Computing for bio-inspired data processing” (2024 - graduated)
3. Dermanis Dimitrios (University of the Aegean) thesis title “Neuromorphic Systems for cyber-physical security” (2024 - pending)
4. Aris Tsirigotis (University of the Aegean) thesis title “Neuromorphic photonic schemes for biomedical analysis” (2025 - graduated)
5. Nikolaos Tzekas (University of West Attica) thesis title “Reconfigurable Photonics for Neuromorphic Applications) (2025 - pending)

### Co-Supervisor

1. Kostas Sozos (University of West Attica - graduated)
2. Ioannis Tsilikas (National Technical University of Athens)

3. Panagiotis Georgiou (University of Patras - pending)
  4. Moustakas Giorgos (University of West Attica - pending)
- 

## 11. EUROPEAN AND NATIONAL RESEARCH PROJECTS

1. **EU Horizon Europe PROMETHEUS** (Technical Manager- Univ. Aegean)
  2. **EU Horizon Europe ECSTATIC** (Senior Researcher – UniWA)
  3. **EU Horizon Europe QPIC1550** (Senior Researcher – UniWA)
  4. **EU H2020 NEoteRIC** (Technical Manager- Univ. Aegean)
  5. **National HFRI QUASAR Advanced Grant** (Coordinator- Univ. Aegean)
  6. **National GSRT – SAFE-IT** (Senior Researcher – Univ. Aegean)
  7. **National HFRI – NOOK** (Senior Researcher – UniWA)
  8. **National HFRI – NEBULA** (Coordinator - NKUA)
  9. **EU H2020 KONFIDO** (Senior Researcher – EULAMBIA ltd.)
  10. **EU H2020 SMILE** (Senior Researcher – EULAMBIA ltd.)
  11. **EU IEF MARIE CURIE Fellowship NOMOS** (Principal Investigator – Thales -III/V Labs)
  12. **National J. Latsis Foundation Studies PROMITHEAS** (Senior Researcher NKUA)
  13. **EU FP7 DOGGIES** (Senior Researcher NKUA)
  14. **EU FP7 CLARITY** (Researcher NKUA)
  15. **EU FP6 IP FAST DOT** (Researcher NKUA)
  16. **EU FP6 PICASSO** (Researcher NKUA)
  17. **EU FP6 WAPITI** (Researcher NKUA)
-