



Loukas Petrou
BSc, MSc, DIC, PhD, MIEEE

Personal Info

+357-22893801
petrou.loukas@ucy.ac.cy
www.loukasprou.com



Memberships

- IEEE Member
- IEEE CAS Member
- ETEK Member (Cyprus Scientific and Technical Chamber)

Certificates

- Analogue IC Design Training from Europractice
- Analogue Mixed-Signal Design Training from Europractice
- Digital IC Design Training from Europractice
- Digital Mixed-Signal Design Training from Europractice
- RF IC Design Training from Europractice
- Summer School on Tunable and Software-Driven Functional Metasurfaces at Aalto University
- Summer School on Asynchronous Circuit Design from Yale University (online)
- Laser equipment usage training

EDUCATION

- 2018 – 2023 **Doctor of Philosophy (PhD) in Electrical Engineering**
Department of Electrical and Computer Engineering,
University of Cyprus (UCY)
Thesis Title: Asynchronous Chiplets for Reconfigurable Metasurfaces
Supervisor: Professor Julius Georgiou
- 2016 – 2017 **Master of Science (MSc) in Analogue and Digital Integrated Circuit Design**
Department of Electrical and Electronic Engineering,
Imperial College London
Thesis Title: Exploiting 65 nm CMOS for Advanced ISFET Sensing Arrays
Supervisor: Professor Pantelis Georgiou
- 2012 – 2016 **Bachelor of Science (BSc) in Electrical Engineering**
Department of Electrical and Computer Engineering,
University of Cyprus (UCY)
Thesis Title: Design of Hodgkin-Huxley Analog Circuit Components
Supervisor: Professor Julius Georgiou

RESEARCH AND TEACHING INTERESTS

Research Interests

My current research interests (2026) are the implementation of electronic and/or microelectronic systems to enable or enhance emerging technologies (a-IGZO), in the field of communication (programmable metasurfaces) for space applications (Low-Earth Orbit). Previous interests include:

- Circuits and systems for:
 - Adaptive metamaterials
 - Reconfigurable intelligent surfaces (RIS)
 - Metasurfaces in Space
 - ICT applications
 - Sensors and biomedical applications
- Asynchronous circuit design
- Low-power, low-latency mixed-signal ICs and chiplets
- Emerging technologies
- RF IC design for communication systems

Teaching Interests

My current teaching interests cover the fundamental knowledge and skills required for microelectronics, as well as advanced devices and circuit techniques.

- Full-custom integrated circuit design
- Analogue integrated circuits and systems
- Advanced analogue and digital system design
- Advanced electronic devices
- Analogue signal processing
- High performance circuits and systems
- Asynchronous circuit design
- Digital circuits and logic

- IOP Peer Review Excellence
- Fire extinguisher and building evacuation training
- First aid Training

- Electrical circuits and networks
- Instrumentation
- Electronics and/or microelectronics laboratory
- RF IC design
- PCB design
- Power electronics

Cadence® Design Systems Online Certificates

- 5G mmWave Handset System Design S1 Simulation and Verification of the RFIC transceiver
- Cadence RTL to GDSII flow v5.0
- Digital IC Design Fundamentals Class v2.0
- High Performance Spectre Simulation
- Mixed-Signal Simulations Using Spectre AMS Designer – AVUM v23.1
- Mixed-Signal Simulations Using Spectre AMS Designer v Xcelium 19.09 with IC 6.1.8 ISR7
- Quantus Transistor-Level T1 Overview and Technology Setup v22.1
- Quantus Transistor-Level T1 Overview and Technology Setup v23.1
- Spectre Simulator Fundamentals S1 Spectre Basics
- Spectre Simulator Fundamentals S2 Large Signal Analyses vSpectre 23.1
- Spectre Simulator Fundamentals S3 Small Signal Analyses vSpectre 23.1
- Virtuoso Abstract Generator vIC6.1.7
- Virtuoso ADE Explorer and Assembler S1 ADE Explorer and Single Test Corner Analysis IC23.1
- Virtuoso ADE Explorer and Assembler S2 ADE Explorer and Multi Test Corner Analysis IC23.1
- Virtuoso ADE Explorer and Assembler S3 Sweeping Variables and Simulating Corners vIC23.1

EMPLOYMENT

Sep 2017 – Present: Special Scientist, University of Cyprus

Working at the University of Cyprus as a PhD and then as a PostDoc, I was part of the following projects:

- **Researcher for the following projects:**
 - **(Upcoming) Jun 26:** “Cyprus Chips Competence Center”, €3,878,020, *DIGITAL-JU-CHIPS-2024-SG-CCC-3*
 - **Mar 25 – May 26:** “Cyprus Space Research and Innovation Centre”, €2,500,000, *Cyprus Research and Innovation Foundation (STRATEGIC INFRASTRUCTURES)*
 - **Feb 23 – Feb 25:** “Chip-Enabled Adaptive Metasurfaces for ICT Systems”, €594,000, *Cyprus Research and Innovation Foundation (CO-DEVELOP-ICT-HEALTH)*
 - **Jan 19 – Jan 23:** “Advanced RF Electronics Center for Adaptive Metamaterials (RF-META)”, €1,000,000, *RPF Infrastructure Grant*
 - **Apr 18 – Apr 20:** “HSAdapt-JG – Real-time Control of the Wireless Behavior of Environments with Hypersurfaces”, €55,000, *RPF Complementary/0916/0008*
 - **Sep 2017 – Jun 2020:** “Visorsurf – A Hardware Platform for Software-driven Functional Metasurfaces”, €5,000,000, *H2020-FETOPEN-1-2016-2017*
- **Teacher for core ECE modules at UCY**
 - ECE 305 (2021) – Electronic devices and Circuits II: This module is for 3rd year students and looks at secondary effects in MOS devices, single stage amplifiers, differential amplifiers, current mirrors, frequency response, noise, feedback, op-amp design, stability and compensation, and reference circuits.
 - ECE 306 (2022) – Electronics circuits laboratory: This module is for 3rd year students, where they get a hands-on experience with analogue integrated circuits. They also design integrated circuits on Cadence Virtuoso using a commercially available PDK (TSMC 0.18 um).
- **Teaching assistant or preparations for ECE modules at UCY**
 - ECE 305 (2023, 2025) – Electronic devices and Circuits II
 - ECE 306 (2017-2026) – Electronics circuits laboratory
- **Proposal writing**
 - Successful proposal and coordination (in collaboration with my advisor) for continuation of my PhD research – “Chip-Enabled Adaptive Metasurfaces for ICT Systems”, *Cyprus Research and Innovation Foundation (CO-DEVELOP-ICT-HEALTH)*, €360,000 of €594,000.

- Virtuoso Schematic Editor vIC 6.1.8 ICADV 20.1 ISR25 and SPECTRE 20.1
- Virtuoso Schematic Editor vIC 23.1 ISR2 and SPECTRE 23.1 ISR1
- Virtuoso Floorplanner vIC6.1.7
- Virtuoso Layout Design Basics vIC23.1
- Virtuoso ADE Explorer and Assembler S4 Monte Carlo Analysis Real Time Tuning and Run Plans

Invited

- Invited presenter at the 18th International Conference on PhD Research in Microelectronics and Electronics (PRIME), 21 June 2023, Valencia, Spain

Achievements and Interests

- 2015: Participated in the UROP program of the University of Cyprus
- 2010: Awarded the position of Officer of Communications from Cyprus Ministry of Defence
- 2009: Participated in the Summer School of Science and Computer Engineering at the University of Cyprus
- 2008: Awarded with black belt / 1 Dan in Shaolin Kung Fu
- 2006 – 2009: Various certificates of attendance in football tournaments with local football club
- 2003 – 2006: Certificates of participation in national mathematical Olympiad

Languages – Fluent

- English
- Greek

- Engaged in planning, budgeting and writing successful EU proposal (*Cyprus Chips Competence Center*).
- Engaged in infrastructure proposal for a state-of-the-art microelectronics centre in Cyprus.
- **Technical committee co-chair for IEEE conference**
 - PRIME 2024
- **Regular reviewer for IEEE**
- **Session Chair for IEEE Conference**
- **Seminars/Talks**
 - UCY ECE Seminar Series, 25/11/20: Asynchronous Digital ASIC Design for the Realization of Scalable and Programmable Metamaterials
 - EMPHASIS Launch Event, 25/11/20: Integrated Circuits for RF Metasurfaces
 - UCY ECE Seminar Series, 15/03/23: ASICs for Adaptive Metasurfaces
 - Annual Talks during various events at the University.
- **Co-supervise final year students**
- **Key researcher on EU project**
 - Manage Consortium Meetings
 - Meeting strict deadlines
 - Presentations, Technical Discussions and Key Decisions
- **Project coordination skills**
 - Interview personnel
 - Budgeting
 - Tasks assignment and implementation. Keeping track using industry-preferred tools
 - Meeting coordination between partners
 - Handling project needs and issues.

TECHNICAL SKILLS

Circuits and Systems:	Full-Custom Analogue, Digital, Mixed-Signal and Asynchronous Digital IC Design with Cadence®, Synopsys® tools and Siemens® tools. PCB Design with Altium Designer® and Cadence® Allegro
IC assembly	Analogue, Digital and mixed-signal IC verification, assembly and foundry contact for MPW or full-wafer fabrication, die cutting and packaging
PCB assembly	Rigid, Rigid Flex, Flexible PCB order, component order; PCB assembly/population
Tests and Measurements in Laboratory	IC Wire-Bonding; Pick-and-Place; Re-flow Oven; X-Ray Inspection; Probe Station; Logic analyser; Source-Measure Units; Oscilloscopes; Power supplies; Advanced Soldering/Desoldering; PCB manufacturing; BGA rework station and all basic tools and equipment of an electronics laboratory
FPGA/MCU programming	Xilinx® Vivado and Vivado HLS; Altera® – Quartus II; Raspberry Pi; Arduino; ESP32; ARM®; STM32
Technology CAD	Synopsys Sentaurus TCAD for 3D technology modelling
Programming	Verilog; System Verilog; VHDL; C; C++; Basic Java

Flowchart / Schematic Tools	Microsoft Visio; Adobe Photoshop; Canva
Video Editing	Camtasia Studio; OBS Studio
Math Tools / System Design	MathWorks MATLAB; NI LabView
Other Com. Skills	ECDL (7 courses) including Microsoft Word, Excel, Power Point, Access etc. Atlassian Jira and Notion for project coordination. LaTeX for professional writing.
Operating Systems	Windows; Linux/Unix (RHEL server preparation and Cadence Design System installation and maintenance); MacOS

PUBLICATIONS

Journal Articles

1. **L. Petrou**, Y. Stratakos, K. Michail, A. Kounoudes, M. A. Antoniadis and J. Georgiou, "A Programmable Metasurface Framework With Modular Architecture for Flexible and Scalable Deployment," in *IEEE Access*, vol. 14, pp. 66134-66148, 2026,
2. **L. Petrou** and J. Georgiou, "An ASIC Architecture With Inter-Chip Networking for Individual Control of Adaptive-Metamaterial Cells," in *IEEE Access*, vol. 10, pp. 80234-80248, 2022.
3. **L. Petrou**, K. M. Kossifos, M. A. Antoniadis and J. Georgiou, "A Programmable Complex Impedance IC for Scalable and Reconfigurable Meta-Atoms," in *IEEE Transactions on Nanotechnology*, vol. 21, pp. 692-702, 2022.
4. **Petrou, L.**, Kossifos, K.M., Antoniadis, M.A. and Georgiou J., "The first family of application-specific integrated circuits for programmable and reconfigurable metasurfaces" *Sci Rep* 12, 5826 (2022).
5. Kossifos, K.M., **Petrou, L.**, Varnava, G., Ptilakis, A., Tsilipakos, O., Liu, F., Karousios, P., Tasolamprou, A.C., Seckel, M., Manessis, D., Kantartzis, N.V., Kwon, D., Antoniadis, M.A. and Georgiou, J. "Toward the Realization of a Programmable Metasurface Absorber Enabled by Custom Integrated Circuit Technology," in *IEEE Access*, vol. 8, pp. 92986-92998, 2020.
6. Dimitrios Kouzapas, Constantinos Skitsas, Taqwa Saeed, Vassos Soteriou, Marios Lestas, Anna Philippou, Sergi Abadal, Christos Liaskos, **Loukas Petrou**, Julius Georgiou, Andreas Pitsillides, "Towards fault adaptive routing in metasurface controller networks", *Journal of Systems Architecture*, Volume 106, 2020, 101703.

Conference Papers & Workshops

1. **L. Petrou**, K. Michail, A. Kounoudes, M.A. Antoniadis and J. Georgiou, "Experimental Evaluation of a Varactor-Tuned Programmable Metasurface with Modular Electronics – Toward ASIC Integration", *2026 IEEE International Symposium on Circuits and Systems (ISCAS), Shanghai, China, 2026*.
2. **L. Petrou**, T. Brandt, Y. Stratakos, M.A. Antoniadis, P. Megerditchian, K. Michail, A. Kounoudes and J. Georgiou, "Enhanced Programmability of Reconfigurable Intelligent Surfaces for Smart Cities using Application-Specific Integrated Circuits", *2025 IEEE*

- International Symposium on Circuits and Systems (ISCAS)*, London, United Kingdom, 2025, pp. 1-5.
3. **L. Petrou**, M.A. Antoniadis, and J. Georgiou, "Dynamic Control of Reconfigurable Intelligent Surfaces: An IC-Based MOS Varactor Approach", *2024 IEEE International Symposium on Circuits and Systems (ISCAS)*, Singapore, Singapore, 2024, pp. 1-5.
 4. Saeed, T., Skitsas, C., Kouzapas, D., Lestas, M., Soteriou, V., Philippou, A., Abadal, S., Liaskos, C., **Petrou, L.**, Georgiou, J. and Pitsillides, A., "Fault Adaptive Routing in Metasurface Controller Networks," *2018 11th International Workshop on Network on Chip Architectures (NoCArc)*, Fukuoka, Japan, 2018, pp. 1-6.
 5. Kouvaros, P., Kouzapas, D., Philippou, A., Georgiou, J., **Petrou, L.**, Pitsillides, A. (2018), "Formal Verification of a Programmable Hypersurface", Howar, F., Barnat, J. *Formal Methods for Industrial Critical Systems. FMICS 2018. Lecture Notes in Computer Science()*, vol 11119. Springer, Cham.
 6. **L. Petrou**, P. Karousios and J. Georgiou, "Asynchronous Circuits as an Enabler of Scalable and Programmable Metasurfaces," *2018 IEEE International Symposium on Circuits and Systems (ISCAS)*, Florence, Italy, 2018, pp. 1-5.
 7. N. Moser, **L. Petrou**, Y. Hu and P. Georgiou, "An ISFET Pixel with Integrated Trapped Charge Compensation using Temperature Feedback," *2018 IEEE International Symposium on Circuits and Systems (ISCAS)*, Florence, Italy, 2018, pp. 1-5.