European Training
Emerging Technologies for 5G networks

Venue:
Balkan Center, Bld. A
Center for Interdisciplinary Research & Innovation
Aristotle University of Thessaloniki | 10-13 Sep. 2019

"Emerging Technologies for 5G networks"

Future 5G networks will give rise to a wide range of new services, including enhanced Mobile Broadband (eMBB) applications, Machine-to-Machine (M2M) communication and Internet of Things (IoT), addressing the needs of multiple vertical markets. The large variety of demanding applications and use case scenarios have been setting highly demanding end-user requirements, such as low latency, high traffic capacity, spectral efficiency, low energy consumption for the end-to-end communication, placing tremendous load on the underlying infrastructure of the fronthaul network. On the verge of the 5G era, Fiber Wireless technologies and Integrated Photonics will play a pivotal role in supporting the service and network requirements, while the emerging converged Fiber Wireless network architectures relying on PONs and Optical Transport Networks will certainly require enhanced Medium Access Control schemes and more efficient resource allocation mechanisms, stimulating intense Research & Development efforts in this direction.

Organized by the Aristotle University of Thessaloniki (AUTH) within the frames of the EUIMWP Cost Action and the 5G-PHOS 5G-PPP Phase II IA, the European Training aims to cover all topics of Emerging Technologies for 5G, with the main focus being on

1) *Passive optical networks: architectures, Media Access Control and Resource Allocation techniques.*
2) *Fiber-wireless (FiWi) access networks: Challenges and opportunities*

The training will be hosted at the facilities of the Center for Interdisciplinary Research and Innovation (C.I.R.I., http://kedek.auth.gr/) of the Aristotle University of Thessaloniki, which hosts the laboratory facilities of the Wireless and Photonic Systems and Networks research group (WinPhos, http://winphos.web.auth.gr/) and its 5G testbed infrastructure. The training will include talks from both Industry and Academia and is mainly intended for Ph.D. students and Early Carrier Investigators.

The organizing committee:
Dr. Chris Vagionas (chvagion@csd.auth.gr)
Dr. George Kalfas (gkalfas@csd.auth.gr)
Prof. Amalia Miliou (amiliou@csd.auth.gr)

Agenda and more information:
The agenda of the event and more information can be found on the following link below
http://www.5g-phos.eu/index.php/training-school-5G

Registration:
Attendance to the Training School is free of charge, without any fee included, but requires registration. Registration can be done online in the following link:
http://www.5g-phos.eu/index.php/add-sch-reg

Grants for attending the Training School
The EUIMWP (CA 16220) COST Action will offer a fixed grant (amount still to be confirmed) to trainees coming from COST countries and Near Neighbour Countries (please check the eligibility conditions in the COST Vademecum, downloadable from the right menu of the COST website (https://www.cost.eu/cost-actions/cost-actions-networking-tools/). These grants are a contribution to travel, accommodation and meals expenses of trainees during their attendance to the course, but they will not necessarily cover the totality of the expenses.

The grants will be given in a first come, first served basis, after checking that the eligibility criteria are met.

The Grant Holder reserves the right to modify the number of grants according to budget availability.

The grants will always be paid *a posteriori*, after checking that the grantee has attended the entire event and signed the attendance list every day.

How to apply for a grant by the EUIMWP COST Action?
Please send an email to Pepa Bayarri, the Grant Holder Manager of the EUIMWP COST Action (ghmanager.upv@gmail.com) expressing your interest in getting a grant, with the following documents attached:

• Document of your acceptance in the training school, signed by the organisers (a copy of their acceptation email will do).
• Any kind of proof to show your affiliation to your institution (a letter signed by your supervisor, a copy of your contract/scholarship, etc.).

Should you have any question regarding the COST grants, please contact Pepa Bayarri.

Thank you and kind regards,

José Capmany (Chair and Grant Holder)
Chris Vagionas (Local Organiser)
Pepa Bayarri (Grant Holder Manager)

AGENDA
From the 10th to the 13th of September 2019

1st Day – 10th September 2019:   Medium Access Control and Resource Allocation

Time	Speaker	Tentative Title	Affiliation
11:15-12:45	Prof. Amalia Miliou	Opening Remarks	Aristotle University of Thessaloniki
	Dr. Chris Vagionas	End-to-End 60GHz Fiber Wireless testbed infrastructure for future 5G mmWave networks	
12:45-13:45	Lunch Break		
13:45-15:30	Prof. Nirmalathas Ampalavanapillai	Photonic RoF Fronthauls for the 60GHz & Medium Access Control for future high capacity wireless	University of Melbourne
15:30-16:00	Coffee Break		
16:00-17:45	Dr. George Kalfas & Mr. Nikos Karageorge	Medium Transparent MAC protocols for Fiber-Wireless 5G mmWave Cloud-RANs	Aristotle University of Thessaloniki

2nd Day – 11th September 2019:   5G Use Cases, Demonstrations and Hardware

Time	Speaker	Tentative Title	Affiliation
09:00-10:45	Dr. Konstantinos Filis	5G Enablers and Use Cases: The role of 5G in Cooperative Intelligent Transport Systems (C-ITS)	COSMOTE Mobile Communications
	Dr. Kostas Tsagkaris	Software Defined Network aspects in the 5G era	Incelligent
10:45-11:15	Coffee Break		
11:15-12:45	Prof. Andreas Stöhr	Photonic Xhaul for 5G	University of Duisburg-Essen
	Mr. Yigal Leiba	High Gain Beamforming	Siklu Communication

12:45-13:45	Lunch Break		
13:45-15:30	Dr. Christophe Caillaud	Optoelectronics component for access network and fix/mobile convergence.	3-5 Lab
	Dr. Tolga Tekin	Heterogeneous Integration for Massive Communication Systems	Fraunhofer Institute for Reliability and Microintegration
15:30-16:00	Coffee Break		
16:00-17:45	Mr. Ioannis Stratakos	FPGA for DSP prototyping in 5G telecom: state-of-the-art application-specific SoC devices and the use of RFSoC in 5GPHOS	Institute of Communication and Computer Systems / National Technical University of Athens
	Dr. Evangelos Pikasis	Flexible Baseband Units with NR compliance	Eulambia Advanced Technologies

3rd Day – 12th September 2019: Emerging Technologies: A-RoF, X-Haul, IoT and Quantum Enhanced Communication.

Time	Speaker	Tentative Title	Affiliation
09:00-10:45	Prof. Zhongxia Simon	Path towards 100 Gbps real-time communication, from circuit design to link demonstrator	Chalmers University of Technology
	Dr. Anne Laure Billabert	Simulation tools to analyse the transmission of 5G and WiGig Wireless signals over optical fiber	Le Cnam / ESYCOM FRE 2028 (Le Cnam, CNRS, ESIEE Paris, Université Paris-Est Marne-la Vallée *(S. Faci, E. M. Moutaly, C. Algani)*
10:45-11:15	Coffee Break		
11:15-12:45	Dr. Colm Browning	A-RoF for microwave and mm-wave applications over optical access	Dublin City University
	Prof. Kostas Siozios	Deploying Large-Scale IoT Systems in 5G networks	Aristotle University of Thessaloniki

12:45-13:45	Lunch Break		
13.45-15.30	Prof. Nathan Gomes	Why we now have a converged "X-haul" for 5G and Beyond Mobile Transport Networks	University of Kent
	Prof. Anna Tzanakaki	Optical networking an Enabler for 5G	Univ. Bristol and Univ. Athens
15:30-16:00	Coffee Break		
16:00-17:45	Dr. Giannis Giannoulis	Quantum-Enhanced Communication Layer for Secured 5G Networks	Institute of Communication and Computer Systems / National Technical University of Athens

4th Day – 13th September 2019: Hands On Training Day

Time	Speaker	Tentative Title	Affiliation
09:00-10:45	Mr. Nikos Argyris	High Capacity Fiber-Wireless Fronthaul: synergies of A-RoF with Smart ICs	Mellanox Technologies
10:45-11:15	Coffee Break		
11:15-12:45	Dr. Marios Gatzianas	Millimeter wave MIMO and CoMP - Hands on Training on antenna array simulations	International Hellenic University
12:45-13:45	Lunch Break		
13:45-15:30	Mr. Eugenio Ruggeri	*Quick lab tour* & Hands on Experimental Training on PON and Fiber Wireless links	Aristotle University of Thessaloniki