@UC3M FiWiN5G Winter School

6 - 8 November 2017

Organized at Universidad Carlos III de Madrid, co-located with DIFRAGEOS workshop. DIFRAGEOS is a Comunidad de Madrid project on space technologies applied to geo-positioning.

With support from PIC4TB Spanish Network of Excellence.

DIFRAGEOS Workshop (November 6th , 2017)

Universidad Carlos III de Madrid, Leganés Campus, Auditorio Padre Soler

The objective of this workshop is to enable attendants to understand new instruments and devices for radio-telescopes for earth and space to make highly accurate geodesic measurements and very high sensitivity astronomic observations. Different standards used in the field of the Global Geodesic Observation System (GGOS) in the International Association of Geodesic (IAG) will be presented.

Soon it is going to be required to perform relevant studies and HW/SW platforms, assessing the role of GNSS in general and Galileo in particular in the next generation 5G wireless networks, in the areas of positioning and network synchronisation, including relevant contributions to standardisation bodies (3gpp and ITU)

Program to be confirmed

Program

9:00-9:15: Registration

9:15-9:30 Opening **ceremony and presentation of Difrageos project**.

9:30-10:15: **LNA at millimeter frequencies.** Eduardo Artal, Universidad de Cantabria

10:15-11:00: **Cryogenic LNA in radioastronomy** Rudiger Haas (Chalmers University of Technology)

11:00-11:45 Coffee break and **poster session** on space instrumentation and Difrageos project

11:45-12:30 **Receivers at millimeter and submillimeter frequencies**. Ramón Gonzalo UPNa

12:30-13:30 **Difrageos project**: L-E. García, J.A. López, G. Carpintero

13:30 – 14:30 Lunch Break

14:30-15:45 **Round Table:** Applied research and product development in ths space area: synergy between university and companies. INDRA, GMV (tbc), Airbus, Sener.

15:45-16:30 Coffee break and poster session on space instrumentation and Difrageos project

16:30-17:15 **Superconductor filters**, Dr. Fred Huang (Birmingham University)

Poster session:

Title: **"Development of Reflectarray Antennas at Millimeter and Submillimeter Frequencies"** E. Carrasco, G. Pérez-Palomino, M, Barba, X. Quintana, M. Andreas, J. M. Otón, J. A. Encinar; School of

Telecommunications Engineering, Universidad Politécnica de Madrid, Madrid, España. D. Headland, W. Withayachumnankul, D. Abbott, C. Fumeaux; School of Electrical and Electronic Engineering, The University of Adelaide, Adelaide, Australia. S. Nirantar, P. Gutruf, J. Schwarz, M. Bhaskaran, S. Sriram; MicroNano Research Facility, RMIT University, Melbourne, Australia

Title: "**New trends in OMT design for space applications**"; J.R. Montejo, J.M. Rebollar, J. Ruiz et al. Universidad Politécnica de Madrid (UPM) y Universidad Autónoma de Madrid (UAM)

Title: "**Reconfigurable and Multi-Functional Filtering Devices**"; R. Gómez-García, J.M. Muñoz-Ferreras. Universidad de Alcalá de Henares (UAH)

Title: "**Status of RAEGE project: the Spanish VGOS experience**" J.A. López-Pérez et al, Difrageos, Observatorio Astronómico Nacional Yebes, OAN-IGN.

Title: "**Yebes Observatory Broad-band Receiver for RAEGE/VGOS radio telescopes**" J.A. López-Pérez et al, Difrageos, Observatorio Astronómico Nacional Yebes, OAN-IGN.

Title: "**2-14 GHz bandwidth feed solution**", L.E. García et al; Difrageos, GREMA-UC3M

Title: "**Room temperature receiver for CMB spectroscopy**" L.E. García et at; Difrageos, GREMA-UC3M

Title: "**Guided wave and printed filters for space applications**" A.G. Lampérez et at; Difrageos, GREMA-UC3M

Title: "**Deformation Measurement System with Temperature Compensation by Using Fiber Bragg Gratings**" A. Zarzuelo, D. Gallego, H. Lamela and Guillermo Carpintero, Difrageos, GOTL-UC3M

Title: "**Photonic Integrated Circuit Microwave Frequency Comb Generator using a low repetition rate mode-locked semiconductor laser** "G. Carpintero et al; Difrageos, GOTL-UC3M

Title: "**INTA antenna and RCS testing facilities**", J.R. Rodríguez-Amor, J.A. Luque; Difrageos, INTA

Title: "**Radioastronomy dual MMIC LNA**" V. González-Posadas et al; Difrageos, DIEMAG Universidad Politécnica de Madrid

Title: "**New differential MMIC LNA**" V. González-Posadas et al; Difrageos, DIEMAG Universidad Politécnica de Madrid

Title: "**New trends in FPGA design: applications to space I**", E. Boemo et al; Difrageos, DSLAB Universidad Autónoma de Madrid

Title: "**New trends in FPGA design: applications to space II**", E. Boemo et al; Difrageos, DSLAB Universidad Autónoma de Madrid

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Mixer receivers & Photonic Integration, Tuesday, November 7th, 2017

<mark>***Millimeter-wave Mixer Receivers***</mark>

09:00 – 09:45 **GaAs-based Schottky Technology for Heterodyne Reception up to 1.2 THz for JUICE-SWI,** *Diego Moro, ACST (DE)*

09:45 – 10:30 **Phase noise assessment for LOs,** *Laura Gonzalo, Rohde & Schwartz (ES)*

<mark>10:30 – 11:00 Coffee Break</mark>

11:00 – 11:45 **UTC-PD Photodiode-based Mixer Receivers,** *Cyril Renaud, UCL (UK)*

11:45 – 12:30 **Ultra-sensitive Receivers with photonic up-conversion,** *Luis Enrique Garcia, UC3M (ES)*

<mark>***Photonic Integrated Circuit: Platforms and Tools***</mark>

12:30 – 13:15 **Simulation of high power semiconductor lasers and amplifiers,** *Ignacio Esquivias, Universidad Politécnica de Madrid (ES)*

<mark>13:15 – 14:00 Lunch Break</mark>

14:00 – 15:30 **Photonic Integration Platforms,** *Pascual Muñoz, VLC Photonics (ES)*
  Photonic Integrated Circuit Ecosystem
  Photonic Integration Foundries
  Case Study: The Spanish CNM SiN foundry

15:30 – 18:00 **Photonic Integrated Circuit Simulation,** *Luis Jorge Orbe, Phoenix BV (NL)*
- *Methods: FDTD, Beam Propagation, Eigenmode Expansion*

<mark>16:30 – 17:00 Coffee Break</mark>

- *When to use each method*

<mark>**20:00 Social dinner for FiWiN5G students and speakers of the day**</mark>

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Wednesday, November 8th, 2017

09:00 – 11:30 **NAZCA, open source Python Photonic IC layout and design,** *Ronald Broeke, Bright Photonics*

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5G vision, Wednesday, November 8th, 2017

Description of current access network

12:00 - 12:30 **Evolution of networks, from 3G to 5G,** Ignacio Berberana (Madrid optical communications research institute, IMDEA)

12:30 - 13:00 **The photonic-wireless frontier: Current structure of the fronthaul,** Dr. Laia Nadal (Catalan optical communications research institute, CTTC)

Walking Lunch (among posters from FIWIN5G students)

Industry vision for 5G

14:00 - 14:30 **TBD**, Muthu Kumaran (Keysight 5G reference center in Malaga).

14:30 - 15:00 **5G standardisation and technologies/architectures selected for the first 5G release phases**, Jonathan Borrill (Anritsu, Director Marketing Strategy Solutions, EMEA)

15:00 – 15:30 **Challenges for testing millimetre wave component for 5G** , Alejandro Nieto (Rohde & Schwartz)

Coffee Break (with posters from FIWIN5G students)

15:30 - 16:00 **Technical challenges related to manufacturing and assembly of the end products**, Mirvais Yousefi (Huawei, Advanced Assembly Technology Center)

16:00 - 16:30 **Key Technologies for 5G Metro Ready Networks**, J.P. Fernández-Palacios (Telefonica GCTO)

16:30 - 17:30 Round table

20:00 Social dinner for all the speakers of the day

VENUE

Universidad Carlos III de Madrid, Leganés Campus, Auditorio Padre Soler

Address: Avenida de la Universidad, 30. Leganés 28911. Madrid Spain

Recommended hotel is shown in the map, TRYP Leganes. Use the hotel website,
https://www1.melia.com/es/new/buscar/habitaciones-y-tarifas.htm

Registration

The cost is 100 Euro per day.

Speakers do not need to register.

For FIWIN5G students, and other interested attendants, please use the following link to register: https://www.flowte.me/storefront/?v=378#. There you can select the inscription for one day ("Inscripción un día", those interested in one day of the program). Those interested in the full program, can register to the full program, "Inscripción programa completo".
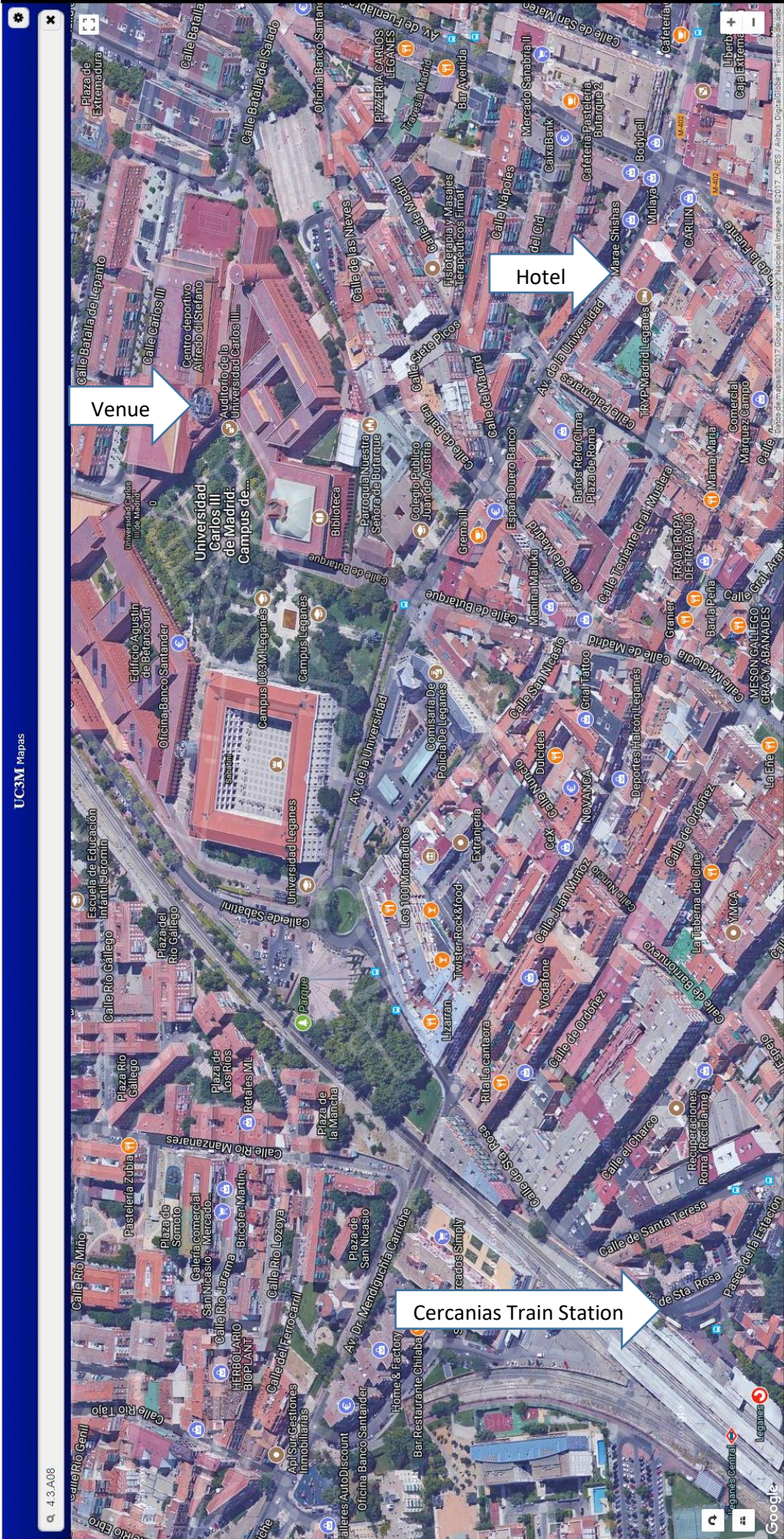
You will arrive to the event registration site.

Click in the green button "Comprar ahora", and then select the type of registration you want:

Inscripción un día   (One-day registration)
Inscripción programa completo   (Three-day registration)