

## Management structure (Core Group)

### Action chair

*Guido Valerio, Sorbonne Université, France*

### Action vice chair

*Oscar Quevedo-Teruel, KTH, Sweden*

### Grant holder scientific representative

*Kristian Zarb Adami, University of Malta, Malta*

### Working groups and transverse activities leaders and coordinators

WG 1 Higher-symmetric waves: dispersive engineering

*Tiago Morgado, University of Coimbra, Portugal*

*Simon Horsley, University of Exeter, UK*

WG 2 Higher-symmetries to design radiating devices

*Eva Rajo-Iglesias, University Carlos III of Madrid, Spain*

*Marco Antoniadou, University of Cyprus, Cyprus*

WG 3 Higher-symmetries for guided-wave components

*Marta Martínez Vázquez, Renesas Electronics, Germany*

*Pablo Padilla, University of Granada, Spain*

WG 4 Modelling of higher-symmetries

*Francesca Vipiana, Politecnico di Torino, Italy*

WG 5 Dissemination of results

*Marko Bosiljevac, University of Zagreb, Croatia*

WG 6 Training activities

*Valma Prifti, Polytechnic University of Tirana, Albania*

*Jan Kracek, Czech Technical University in Prague, Czechia*

TA Medical applications

*Tuba Yilmaz Abdolsaheb, Istanbul Technical University, Turkey*

*Stavros Koulouridis, University of Patras, Greece*

TA Space

*Eloy de Lera Acedo, University of Cambridge, UK*

*Herve Legay, Thales Alenia Space, France*

TA 5G

*Astrid Algaba Brazalez, Ericsson, Sweden*

Grant Coordinator, STSM and Virtual Mobilities

*Enrica Martini, University of Siena, Italy*

ITC grants

*Sergio Matos, Instituto de Telecomunicações, Portugal*



## Partners



UNIVERSIDAD  
DE GRANADA

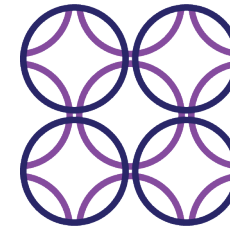


Escuela Técnica Superior de  
Arquitectura de Granada



CITIC-UGA  
CENTRO DE INVESTIGACIÓN EN TECNOLOGÍAS  
DE LA INFORMACIÓN Y LAS COMUNICACIONES

COST Action CA18223  
Future communications with higher-  
symmetric engineered artificial materials



COST ACTION CA18223

SYMAT

FUTURE COMMUNICATIONS WITH  
HIGHER-SYMMETRIC ENGINEERED  
ARTIFICIAL MATERIALS

<https://symat-cost.eu/>

## Scientific meeting, Management Committee meeting and Core Group meeting

21- 22 April 2022, Granada, Spain

Organizer

University of Granada

School of Informatics and Telecommunications (ETSIT)

Department of Signal Theory, Telematics and Communications

Pablo Padilla

### Venue

University of Granada

School of Architecture (ETSAG),

Taller 3 & Renaissance atrium

Campo del Príncipe, s/n,

18071 Granada, Spain

### Online link:

<https://meet.google.com/vex-rwbc-wxo>

### WIFI connection:

eduroam, or alternatively *cviugr* (user: symat@invitados.ugr.es ,  
password: COST22++UGR)

## Wednesday | 20 April 2022

**19:00–23:00** **Informal welcome: walk through the City centre and “Together tapas”**  
(not included in the official program)

19.00-19:15 **Meeting point: Plaza del Carmen (Main entrance of the Town Hall, “Ayuntamiento”)**  
(on-route incorporations, call/whatsapp to +34653327770)

## Thursday | 21 April 2022

**8:30–9:10** **Registration**

**9:10–9:30** **Opening**  
Taller 3, *Pablo Padilla, University of Granada, Spain, and Guido Valerio, Sorbonne Université, France*

9:10–9:20 Organizer opening  
*Pablo Padilla, University of Granada, Spain*

9:20–9:30 Action chair opening  
*Guido Valerio, Sorbonne Université, France*

**9:30–10:30** **Invited industrial & Scientific presentations (I)**  
Taller 3, *Session chair: Guido Valerio*

9:30–10:30 Novel antennas concepts and technologies for space applications  
*Hervé Legay, Thales Alenia Space*

**10:30–11:00** **Coffee break**  
Renaissance atrium

**11:00–13:00** **Invited industrial & Scientific presentations (II)**  
Taller 3, *Session chair: Guido Valerio*

11:00–11:30 Viasat Phased Array Antennas: research activities and industrial application  
*Nevena Saponjic, Viasat*

11:30–12:00 Recent research activities on geodesic lens antennas at Ericsson research (I)  
*Astrid Algaba Brazález and Lars Manholm, Ericsson Research*

12:00–12:30 Recent research activities on geodesic lens antennas at Ericsson research (II)  
*Astrid Algaba Brazález and Lars Manholm, Ericsson Research*

12:30–13:00 Modulated metasurfaces for the design of antennas and beam-formers in the mm-wave and sub-THz range  
*David Gonzalez-Ovejero, IETR*

**13:00–14:00** **Lunch**  
Renaissance atrium

**14:00–15:30** **Core Group meeting**

**15:30–16:00** **Coffee break**  
Renaissance atrium

**16:00–17:15** **Management Committee meeting**

**18:45–20:45** **Welcome reception & Social dinner**  
Restaurant Carmen de la Victoria, Cuesta del Chapiz, 9, 18010 Granada, Spain

*Welcome reception, Prof. Pilar Aranda, Rector of the University of Granada; Profs. Pedro García-Teodoro, Director ETSIT, and José María Manzano-Jurado, Director ETSAG.*

**21–21:45** **Guided visit groups organization and walk towards La Alhambra**  
*Itaca tourist guides*

**22:00–23:30** **Guided night visit to Nazaríes Palaces of La Alhambra**  
*Itaca tourist guides*  
**Mandatory ID or Passport (comfortable footwear recommended)**

## Friday | 22 April 2022

**09:00–10:30** **Scientific and Working Group presentations (I)**  
Taller 3, *Session chair: Enrica Martini*

09:00–09:30 Method-of-Moment modelling of higher symmetries  
*Martin Petek, Politecnico di Torino, Italy*

09:30–10:00 General theory and application of exceptional points of degeneracy in resonators and waveguides  
*Filippo Capolino, UC3M, Spain and Univ California Irvine, USA*

10:00–10:30 Time-varying metamaterials and metasurfaces for antennas and propagation applications  
*Davide Ramaccia, Università Roma Tre, Italy*

**10:30–11:00** **Coffee break**  
Renaissance atrium

**11:00–13:00** **Scientific and Working Group presentations (II)**  
Taller 3, *Session chair: Oscar Quevedo-Teruel*

11:00–11:30 PTD-symmetric waveguides and radiating elements  
*Enrica Martini, University of Siena, Italy*

11:30–12:00 Mirror, PT, and Glyde symmetry in waveguides with exceptional degeneracies  
*Filippo Capolino, UC3M, Spain and Univ California Irvine, USA*

12:00–12:30 Modeling and design of transmitarray antennas exploiting unit-cell anisotropy and symmetries  
*Francesco Foglia-Manzillo, CEA-Leti, France*

12:30–13:00 On Multilayer Slot Antenna Configurations, equipped with Ridged Gap Waveguide Feeding and Glide Symmetric Holes for 5G mm Wave Platforms  
*Panagiotis Petroustos and Stavros Koulouridis, University of Patras, Greece*

**13:00–14:00** **Lunch**  
Renaissance atrium

**14:00–15:30** **Scientific and Working Group presentations (III)**  
Taller 3, *Session chair: Astrid Algaba Brazález*

14:00–14:30 Periodic Leaky-Wave Antennas Based on Asymmetric Unit Cells  
*Davide Comite, Sapienza University of Rome, Italy*

14:30–15:00 Understanding the Dispersion Diagrams of Two-Dimensional Supercells  
*Shiyi Yang<sup>1</sup>, Francisco Mesa<sup>2</sup>, Oskar Zetterstrom<sup>1</sup>, Sarah Clendinning<sup>1</sup>, Oscar Quevedo-Teruel<sup>1</sup>, <sup>1</sup>KTH Royal Institute of Technology, Sweden, and <sup>2</sup>University of Seville, Spain*

15:00–15:30 Inverse electromagnetic scattering and its medical applications  
*Mehmet Nuri Akıncı and Tuba Yilmaz Abdolsaheb, Istanbul Technical University, Turkey*

**15:30–16:00** **Coffee break**  
Renaissance atrium

**16:00–17:00** **Scientific and Working Group presentations (IV)**  
Taller 3, *Session chair: Eva Rajo-Iglesias*

16:00–16:30 Multi-modal equivalent circuit approach for stacks of slot-like FSS's with higher symmetries  
*Francisco Mesa<sup>1</sup>, Antonio Alex-Amor<sup>2</sup>, Ángel Palomares-Caballero<sup>2</sup>, Carlos Molero<sup>2</sup>, Pablo Padilla<sup>2</sup>, <sup>1</sup>University of Seville, Spain, <sup>2</sup>University of Granada, Spain*

16:30–17:00 Integral equations for metasurface design  
*Modeste Bodehou, Jean Cavillot, Denis Tihon, Christophe Craeye, Universite catholique de Louvain, Belgium*

**17:00–17:30** **Closing**  
Taller 3, *Pablo Padilla, University of Granada, Spain, and Guido Valerio, Sorbonne Université, France*

**19:00–23:00** **Informal farewell: walk through Albaicín and “together tapas”**  
(not included in the official program, **comfortable footwear recommended**)

19.00-19:15 **Meeting point: Rectorate of the University of Granada (Main entrance. Cuesta del Hospicio S/N)**  
(on-route incorporations, call/whatsapp to +34653327770)