



UNIVERSITY: Public University of Navarre (UPNA)

WIT PROGRAMME'S RESEARCH LINE NAME:

High capacity communications in THz – Reconfigurable metasurfaces

DOCTORAL PROGRAMME: <https://www.unavarra.es/escuela-doctorado/doctorate-programs/current-plan/engineering-and-architecture/doctorate-in-communications-technology-bioengineering-and-renewable-energies?languageId=1>

COMPLETE DESCRIPTION OF THE LINE

Reconfigurable metasurfaces are smart surfaces able to dynamically control the waves impinging on them. They are based typically on a thin dielectric substrate with small metallic elements (called meta-atoms) printed on them, whose shape and arrangement determine the performance of the device. To obtain reconfigurable designs, the meta-atoms have to be loaded with active elements that could be PIN diodes, varactors, MEMs, phase-change materials, etc. Liquid crystal (LC) metasurfaces are an emerging technology able to improve the performance of reconfigurable metasurfaces at millimeter-waves and terahertz.

Here, we propose investigation on LC metasurfaces to develop planar reconfigurable, beam-steerers, lenses, modulators, filters, etc. operating at millimeter-waves and terahertz, for application and 5G and 6G wireless communication devices.

RESEARCH GROUP NAME:

Antenna Group



COORDINATOR:

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https://academicos.unavarra.es/CawDOS//jsf/seleccionActividades/seleccionActividades.jsf?id_pers=6917&idioma=es&elmeucv=N
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ANOTHER RESEARCH LINES OF THE GROUP: list of them

- Antennas
- Metamaterials and periodic structures
- THz technology and applications
- Quantum technologies
- Sensing



- Thermal emission
- Microfabrication

- Entities involved in research lines and contact person:

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▪ Brief group overview

UPNA's Antenna Group has been actively working on different areas of applied electromagnetics for more than 20 years. During these years, it has become a world reference group in metamaterials and nanophotonics, as well as in other areas of applied electromagnetics, such as terahertz technology and corrugated horn antennas.

The group has 6 permanent members, 1 Ramón y Cajal fellow, 4 Post-Docs and 8 PhD students. During the last decade the group averages yearly more than 18 journal publications and attracts funds over 500.000 € per year from public and private sources. Out of these, the group is currently involved in 4 international research projects, among them projects ERC-2020-STG-948504 (ERC Starting Grant), H2020-FETOPEN-964450 and H2020-MSCA-ITN-2019-MENELAOS^{NT}.

Its state-of-the-art facilities for manufacturing and test comprise an ISO-7 clean room for microfabrication and test equipment from RF to the IR, including the THz range.



<http://www.unavarra.es/antennas-group>

- Link of the group to the “Portal of scientific production”
<https://academicos.unavarra.es/CawDOS/?id=90701b928ac24ad4&idio=es&tipo=actGrupo>

REQUIRED QUALIFICATIONS: Engineering, Technology, Physics

Use of CST Studio Suite full wave simulator. Experience in modelling of millimeter wave and Terahertz devices.