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This project has received funding from the *European Union's Horizon 2020 research and innovation programme* under Marie-Sklodowska Curie grant agreement No 101034285

UNIVERSITY: Public University of Navarre (UPNA)

WIT PROGRAMME´S RESEARCH LINE NAME:

Development and advanced manufacturing of sensors - Metamaterial nanophotonic architectures for LIDAR technologies.

DOCTORAL PROGRAMME: Doctorate in Communications Technology, Bioengineering and Renewable Energies 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

Light detection and ranging (LIDAR) systems are a central part of multiple industrial and scientific applications, examples including autonomous driving, drone navigation, industrial sensing and robotics. Integrated photonics offer a promising platform for LIDAR systems with chip-size footprint and CMOS compatibility. However, the development of large-scale and dynamic LIDAR systems requires from the integration of thousands of active elements. The need to control and supply with power such large numbers of elements poses significant design challenges, for which novel paradigms in optical antenna design are needed. The main goal of this research line is to leverage cutting-edge advances in nanophotonics (for example, metamaterials, topological photonics, zero-index media, metasurfaces, …) to enable new optical antenna architectures for LIDAR technologies.

RESEARCH GROUP NAME:

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Antenna Group

COORDINATOR:

- Last and first name; link to the "Portal of scientific production": Liberal, Iñigo https://academicos.unavarra.es/CawDOS/?id=dd37a14b7a0b8572&idioma=es&tipo=activ&elme
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MEMBERS OF THE LINE RESEARCH:

- Miguel Beruete
- Navajas Hernández, David
- Vázquez-Lozano, Juan Enrique
- Ortega Gómez, Ángel
- Hernández Martínez, Osmery
- Pérez Escudero, José Manuel

ANOTHER RESEARCH LINES OF THE GROUP: list of them

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

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- Entities involved in research lines and contact person:

✓ Academic entities:

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✓ Industrial entities:

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- Tafco Metawireless (www.tafcomw.com)

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- Centro Nacional de Energías Renovables, CENER (jbapezteguia@cener.com)
- NAITEC (jbravo@naitec.es)

- 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&idioma=es&tipo=actGrupo

REQUIRED QUALIFICATIONS: Engineering, Physics, Technology

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Knowledge of Electromagnetics. MsC Thesis in a topic in the fields of electromagnetics/nanophotonics/antennas

Gobierno de Navarra
Departamento de Universidad,
Innovación y Transformación Digital

Nafarroako Gobernua
Unibertsitateko, Berrikuntzako eta
Eraldaketa Digitaleko Departamentua