



**UNIVERSITY: Public University of Navarre (UPNA)**

**WIT PROGRAMME'S RESEARCH LINE NAME:**

Development and advanced manufacturing of sensors – Metasurface enhanced radar sensors

**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**

Radar based applications have grown in the last years thanks to the availability of cost-effective radar chips inherited from the automotive industry. However, solutions based on these radars are usually for far-field operation.

In this research line we aim at improving the performance of radar sensors by combining them with metasurfaces. These periodic structures have been successfully used in sensing applications and will allow improving their sensitivity and even near field operation. However, efficient integration of both technologies must be explored.

This type of sensor can have its application in different areas. For example, for non-destructive quality control of the encapsulation materials in photovoltaic modules (Radical Project, Science Ekaitza Ideas Award in Renewable Energies and Resources).

**RESEARCH GROUP NAME:**

Antenna Group



### **COORDINATOR:**

- Last and first name; link to the “Portal of scientific production”:  
Ederra, Iñigo  
<https://academicos.unavarra.es/CawDOS/?id=f74fd1a591e427b2&idioma=es&tipo=activ&elmeucv=N>
- Department: Department of Electrical, Electronic and Communications Engineering
- Email: inigo.ederra@unavarra.es
- Telephone number: (+34) 948 16 6039

### **MEMBERS OF THE LINE RESEARCH:**

- Beruete Díaz, Miguel
- Biurrun Quel, Carlos
- Chocarro Álvarez, Javier
- Del Río Bocio, Carlos
- Ederra Urzainqui, Iñigo
- Iriarte Galarregui, Juan Carlos
- Liberal Olleta, Iñigo
- Pérez Escudero, José Manuel
- Pérez Quintana, Dayan
- Teniente Vallinas, Jorge
- Torres García, Alicia Elena

### **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:
    - KTH-Royal Institute of Technology, Sweden (Prof. O. Quevedo, [oscarqt@kth.se](mailto:oscarqt@kth.se))
    - Nazarbayev University, Kazakhstan (Prof. B. Orazbayev, [bakhtiyar.orazbayev@nu.edu.kz](mailto:bakhtiyar.orazbayev@nu.edu.kz))
    - Newcastle University, UK (Prof. V. Pacheco-Peña, [Victor.Pacheco-Pena@newcastle.ac.uk](mailto:Victor.Pacheco-Pena@newcastle.ac.uk))
    - Novosibirsk State University, Russia (Prof. S. Kuznetsov, [SAKuznetsov@nsm.nsu.ru](mailto:SAKuznetsov@nsm.nsu.ru))
    - University of Duisburg-Essen, Germany (Prof. A. Stöhr, [andreas.stoehr@uni-due.de](mailto:andreas.stoehr@uni-due.de))
    - University of Pennsylvania, USA (Prof. N. Engheta, [engheta@ee.upenn.edu](mailto:engheta@ee.upenn.edu))
    - University of Rennes 1, France (Prof. R. Suleau, [ronan.sauleau@univ-rennes1.fr](mailto:ronan.sauleau@univ-rennes1.fr))
    - University of Siegen, Germany (Prof. P. Haring, [peter.haring@uni-siegen.de](mailto:peter.haring@uni-siegen.de))
    - University of Siena, Italy (Prof. S. Maci, [macis@dii.unisi.it](mailto:macis@dii.unisi.it))
    - University of Technology Sydney, Australia (Prof. R.W. Ziolkowski, [Richard.Ziolkowski@uts.edu.au](mailto:Richard.Ziolkowski@uts.edu.au))
    - University of Birmingham, UK (Prof. M. Navarro, [m.navarro-cia@bham.ac.uk](mailto:m.navarro-cia@bham.ac.uk))



- Universidad Carlos III de Madrid, Spain (Prof. D. Segovia, [dani@tsc.uc3m.es](mailto:dani@tsc.uc3m.es))
  - TECNUN, Spain (Prof. R. Berenguer, [rberenguer@tecnun.es](mailto:rberenguer@tecnun.es))
- ✓ Industrial entities:
- Anteral S.L. ([Itziar Maestrojuan imaestrojuan@anteral.com](mailto:Itziar.Maestrojuan@anteral.com))
  - Tafco Metawireless ([www.tafcomw.com](http://www.tafcomw.com))
  - Expace on Board Systems (Rubén García [r.garcia@expa.net](mailto:r.garcia@expa.net))
  - Centro Nacional de Energías Renovables, CENER (Jaione Bengoetxea Apezteguia, [jbapezteguia@cener.com](mailto:jbapezteguia@cener.com))
  - NAITEC (Javier Bravo, [jbravo@naitec.es](mailto:jbravo@naitec.es))
  - Asociación de la Industria Navarra, AIN (Pilar Herrera, [pherrera@ain.es](mailto:pherrera@ain.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<sup>NT</sup>.



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&idoma=es&tipo=actGrupo>

**REQUIRED QUALIFICATIONS:** Engineering, Physics, Technology

Use of full-wave electromagnetic simulators. MSc Thesis in a topic in the fields of electromagnetics/RF/antennas.