

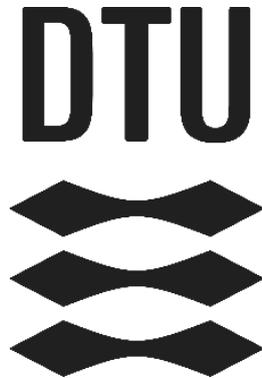
DC14: Topology optimization of reconfigurable metasurfaces, tailored for holographic applications

Doctoral position with the [TopOpt-group](#) in the Department of Civil and Mechanical Engineering at the [Technical University of Denmark](#) (DTU), Denmark.

You will be employed at DTU Lyngby Campus in Denmark.

Main supervisor: Prof. [Rasmus Ellebæk Christiansen](#) [DTU]

Co-supervisors/mentors: Prof. [Ana Diaz Rubio](#) [UPV] and Dr. [Sven Burger](#) [JCM]



Objectives:

- Design and numerically analyze **reconfigurable metasurfaces for holographic applications**, based on full-wave modelling of the electromagnetic field and on phase-map approaches.
- To develop **topology-optimization methods** for designing reconfigurable holographic metasurfaces **inherently compatible with fabrication techniques** & material platforms.
- Development of **overlapping-domains-based and supercell-based techniques for efficient and accurate modelling of large-area metasurfaces**, enabling inverse design of large-scale reconfigurable holographic metasurfaces.
- **Fabrication and experimental characterization of prototypes** of reconfigurable holograms, based on phase-change materials and/or liquid crystals.

This position is part of the <https://metatune.webs.upv.es/> MetaTune Doctoral Network "Reconfigurability using inversely designed metasurfaces", which has been funded under the Horizon Europe Marie Skłodowska-Curie Actions (MSCA) program.

Acquire knowledge: Throughout the thesis, the candidate will develop strong expertise in photonic inverse design & advanced electromagnetic modelling as-well-as gain practical experience with nanofabrication, and experimental testing of metasurfaces.

Design
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Materials
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Fabrication
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Characterization
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[→ Go to the project webpage for more information](#)

Technology for people

DTU develops technology for people. With our international elite research and study programmes, we are helping to create a better world and to solve the global challenges formulated in the UN's 17 Sustainable Development Goals. Hans Christian Ørsted founded DTU in 1829 with a clear mission to develop and create value using science and engineering to benefit society. That mission lives on today. DTU has 13,500 students and 6,000 employees. We work in an international atmosphere and have an inclusive, evolving, and informal working environment. DTU has campuses in all parts of Denmark and in Greenland, and we collaborate with the best universities around the world.

Job Description

Doctoral Position



What METATUNE Offers:

- Starting gross salary (w/o prior experience) of ~4550 EUR/month (April 2024 value) following the regulations of [DTU](#), with the potential for additional funding pending your family status.
- Opportunity to pursue a PhD degree at a leading European university within a collaborative, international network.
- Training program including research-specific and transferable skills courses.
- Opportunities for internships, secondments, and collaboration within academia and industry partners across Europe.
- Active participation in workshops, conferences, and network-wide events to build professional and scientific connections.
- Stimulating, multidisciplinary, and international research environment within a prestigious European training network.

Starting date: November-December 2026.

Deadline for online application: May 31, 2026 (but candidates are encouraged to apply as soon as possible).

Salary and appointment terms: The appointment will be based on the collective agreement with the Danish Confederation of Professional Associations. The allowance will be agreed upon with the relevant union. The period of employment is 3 years funded through the MSCA network.

Mandatory Requirements:

- **Responsibilities and qualifications:** You must have a two-year master's degree (120 ECTS points) or a similar degree with an academic level equivalent to a two-year master's degree in fields related to the research topic, e.g. Telecommunications Engineering, Applied Physics, Optics, Electrical Engineering.
- **Approval and Enrolment:** The scholarship for the PhD degree is subject to academic approval, and the candidate will be enrolled in one of the general degree programmes at DTU. For information about our enrolment requirements and the general planning of the PhD study programme, please see [DTU's rules for the PhD education](#).
- You must **not have a doctoral degree** at the time of recruitment.
- You must **not have resided or carried out your main activity** (work, studies, etc.) in Denmark for more than **12 months in the 36 months** immediately before the recruitment (this is a requirement from the funding authority).
- Strong skills in the **English** language.
- Background knowledge of numerical modelling of electromagnetic systems is essential, and knowledge of computational inverse design is desired.

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