

# PhD position Multi-dimensional Signal Processing for Next Generation Wireless Radios

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The Myers Lab develops novel signal processing techniques for communications and sensing using wireless systems. We focus on the applied and the theoretical aspects of practical problems in wireless.

Challenge: Design new waveforms and low complexity algorithms for communication under hardware constraints.

Change: Use tools from tensor signal processing, optimization and multi-dimensional sequence design.

Impact: Achieve high speed wireless links with low cost and low power radio architectures.

## Job description

The progress in circuit technology has allowed researchers to think about leveraging spectrum beyond millimeter wave. It is not unreasonable to imagine commodity radios with massive antenna arrays and emerging radio frequency (RF) technologies in the near future. To enable efficient communication with these radios, it is critical to understand hardware constraints at the antennas, the RF and the digital front ends. In this position, you will design new waveforms and algorithms for communications while accounting for the hardware constraints in futuristic radios. To this end, you will use tools from multi-dimensional sequence design, optimization, and tensor signal processing. The waveforms and algorithms designed in your work will be evaluated on a millimeter wave testbed to highlight the potential of the proposed solutions in next generation wireless systems.

### *Department*

The department Delft Center for Systems and Control (DCSC) of the faculty Mechanical, Maritime and Materials Engineering, coordinates the education and research activities in systems and control at Delft University of Technology. The Centers' research mission is to conduct fundamental research in systems dynamics and control, involving dynamic modelling, advanced control theory, optimisation and signal analysis. The research is motivated by advanced technology development in physical imaging systems, renewable energy, robotics and transportation systems.

## Requirements

You should have:

- a Masters degree in Electrical Engineering, Systems & Control, Engineering Physics, or any field related to the lab's research topics;
- a background in electromagnetics, circuits and applied linear algebra;
- a solid understanding of statistical signal processing and optimization;
- a good command of English (verbal and written).

## Conditions of employment

TU Delft offers PhD-candidates a 4-year contract, with an official go/no go progress assessment after one year. Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities, increasing from € 2395 per month in the first year to € 3061 in the fourth year. As a PhD candidate you will be enrolled in the TU Delft Graduate School. The TU Delft Graduate School provides an inspiring research environment with an excellent team of supervisors, academic staff and a mentor. The Doctoral Education Programme is aimed at developing your transferable, discipline-related and research skills.

The TU Delft offers a customisable compensation package, discounts on health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged. For international applicants we offer the Coming to Delft Service and Partner Career Advice to assist you with your relocation.

## TU Delft (Delft University of Technology)

Delft University of Technology is built on strong foundations. As creators of the world-famous Dutch waterworks and pioneers in biotech, TU Delft is a top international university combining science, engineering and design. It delivers world class results in education, research and innovation to address challenges in the areas of energy, climate, mobility, health and digital society. For generations, our engineers have proven to be entrepreneurial problem-solvers, both in business and in a social context. At TU Delft we embrace diversity and aim to be as inclusive as possible (see our [Code of Conduct](#)). Together, we imagine, invent and create solutions using technology to have a positive impact on a global scale.

Challenge. Change. Impact!

## Faculty Mechanical, Maritime and Materials Engineering

The Faculty of 3mE carries out pioneering research, leading to new fundamental insights and challenging applications in the field of mechanical engineering. From large-scale energy storage, medical instruments, control technology and robotics to smart materials, nanoscale structures and autonomous ships. The foundations and results of this research are reflected in outstanding, contemporary education, inspiring students and PhD candidates to become socially engaged and responsible engineers and

scientists. The faculty of 3mE is a dynamic and innovative faculty with an international scope and high-tech lab facilities. Research and education focus on the design, manufacture, application and modification of products, materials, processes and mechanical devices, contributing to the development and growth of a sustainable society, as well as prosperity and welfare.

Click [here](#) to go to the website of the Faculty of Mechanical, Maritime and Materials Engineering. Do you want to experience working at our faculty? This [video](#) will introduce you to some of our researchers and their work.

## Additional information

For more information about this vacancy, please contact Nitin Jonathan Myers, Assistant Professor, email: [N.J.Myers@tudelft.nl](mailto:N.J.Myers@tudelft.nl).

For information about the application procedure, please contact Irina Bruckner, HR Advisor, email: [application-3mE@tudelft.nl](mailto:application-3mE@tudelft.nl).

## Application procedure

Are you interested in this vacancy? Please apply by May 31, 2021, via the application button, and upload:

- a cover letter stating their motivation;
- a detailed curriculum vitae;
- the name and contact information of two professional referees;
- a list of courses taken with grades obtained in their Bachelors and Masters degree;
- a list of publications (if any);
- a summary of their Bachelors and Masters thesis.

A pre-employment screening can be part of the selection procedure.

You can apply online. We will not process applications sent by email and/or post.

Acquisition in response to this vacancy is not appreciated.

