

The Delft Center for Systems and Control (DCSC) at Delft University of Technology (TU Delft) in the Netherlands has a vacancy for a one-year postdoctoral position on

Applied Nonlinear Fourier Analysis

Job Description

In many applications, the spatio-temporal evolution of a signal is governed by an evolution equation. Light waves in lossless optical fiber, e.g., evolve according to the nonlinear Schrödinger equation. Nonlinear Fourier transforms decompose such signals into nonlinearly interacting waves of physical relevance. These waves no longer have to be sinusoidal. Recently, there has been interest in using nonlinear Fourier transforms in engineering problems such as fiber-optic communication or the analysis of water-related time series. A major breakthrough achieved by researchers from DCSC and Princeton University has been the development of the first fast nonlinear Fourier transform algorithm similar to the celebrated fast Fourier transform algorithm for computing the conventional Fourier transform. The Delft Center for Systems and Control is looking for a postdoctoral researcher in order to further advance progress in this exciting emerging area. Potential research topics include:

- Development of new fast (inverse) nonlinear Fourier transforms for integrable evolution equations other than the nonlinear Schrödinger equation
- Application of (inverse) nonlinear Fourier transforms in optical communication systems
- New applications such as, e.g., forecasting of water-related time series
- Numerical stability analysis of existing fast (inverse) nonlinear Fourier transforms
- Multidimensional nonlinear Fourier transforms for optical applications

The final research topic will be fitted to the applicants background and interests.

Requirements

The applicant should have a PhD in applied mathematics, electrical engineering, systems and control, or a related subject. A strong track record with algorithm design and a good command of the English language is required. Researchers with a background in signal processing, tensors, numerical analysis, inverse scattering or nonlinear waves are especially encouraged to apply.

Conditions of Employment

TU Delft offers an attractive benefits package, including a flexible work week, and the option of assembling a customized compensation and benefits package (the 'IKA'). Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities.

About Delft University of Technology

TU Delft is the oldest of the four Dutch Universities of Technology. It is conveniently located in the city of Delft, which is close to the Netherlands two biggest cities Amsterdam and Rotterdam. TU Delft is an internationally recognized research university that has been ranked 16th in the Engineering and Technology section of the world-wide QS World University Ranking 2014/15. In the THE World University Ranking 2014/15, TU Delft has been ranked 19th in Engineering and Technology section.

Application and More Information

Please send an application including a motivation letter that outlines the interest in this project, a CV with grades, a list of publications and three academic references to Dr. Sander Wahls (s.wahls@tudelft.nl). Dr. Wahls can also be contacted for more information about this vacancy. The vacancy will remain open until February 15th, 2015, or until a suitable candidate has been found.