



# Towards a Quantum Internet

**Date:** October 13, 2021 (Wednesday)

**Time:** 5:00 p.m.

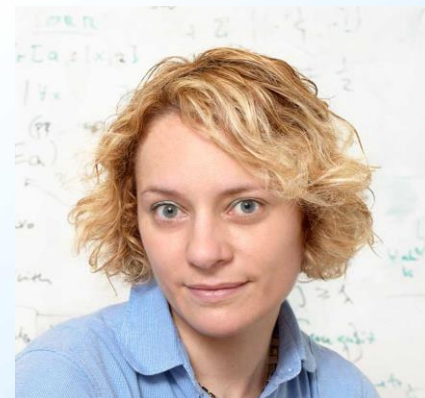
**Venue:** Room 522, 5/F

Chong Yuet Ming Physics Building

**Zoom Online Lecture:** <https://bit.ly/3acCs5p>

**Meeting ID:** 964 8909 7917

**Password:** 2859



*Prof. Stephanie Wehner*  
*QuTech, TU Delft*

## Abstract:

The vision of a Quantum Internet is to provide fundamentally new internet technology by ultimately enabling quantum communication between any two points on earth. Such a Quantum Internet would – in synergy with the ‘classical’ internet that we have today - connect quantum processors in order to achieve new capabilities that are provably impossible using classical communication.

In this talk, we provide an introduction to quantum (internet-) working, and present recent results on the path of taking such a network from a physics experiment to a quantum network system. We report on the realization of the first quantum link layer protocol, now implemented on quantum hardware based on Nitrogen-Vacancy Centers in diamond. We conclude by presenting several tools that can be used to examine the experimental requirements of building larger quantum network, and be used by you to learn more about quantum networking beyond this talk.

## Biography:

Stephanie is Antoni van Leeuwenhoek Professor in quantum information and the Research Lead of the Quantum Internet Division. She represents the division to the outside world as Director Quantum Internet Division. Her goal is to understand the world of small particles – the laws of quantum mechanics – in order to construct better networks and computers. Quantum bits behave quite differently than classical bits, and allow us to solve tasks that are provably impossible for any classical device. Stephanie’s research advances quantum information theory and its applications to both computer science and physics. She has worked extensively in quantum cryptography and communication, and one of her goals is to overcome the theoretical challenges in building large scale quantum networks. As part of the Quantum Internet Team at QuTech, she works with experimentalists in order to jointly realize this goal.

Stephanie is one the founders of QCRYPT, which has become the largest conference in quantum cryptography. She has written numerous scientific articles in both physics and computer science. From 2010 to 2014, her research group was located at the Centre for Quantum Technologies, National University of Singapore, where she was first Assistant and later Associate Professor. Previously, she was a postdoctoral scholar at the California Institute of Technology in the group of John Preskill. In a former life, she worked as a professional hacker in industry.

**Anyone interested is welcome to attend!**

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