

**Special Seminar**  
**MPQ/LMU**

**Date:** Tuesday, April 4, 2017

**Time:** 10:00 a.m. s.t.

**Presentation:** Master Sc. Tobias Vogl  
Center for Quantum Computing &  
Communication Technology  
Department of Quantum Science  
The National University  
Acton ACT 2601  
Australia

**Title:** Room Temperature Single Photon Source  
Using Fiber-Integrated Hexagonal Boron Nitride

**Location:** Discussion Room H 311

**Chair Prof. T. W. Hänsch, Faculty of Physics, LMU**  
**Director Professor Theodor W. Hänsch**

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**ABSTRACT**

Single photons are a key resource for Quantum Optics and Optical Quantum Information Processing. The integration of scalable room temperature quantum emitters into photonic circuits remains to be a technical challenge.

Here I will present a new work utilizing a defect center in hexagonal Boron Nitride (hBN) attached by Van der Waals force onto a multimode fiber as a single photon source. A special feature of the source is that it allows for easy switching between fiber-coupled and free space single photon generation modes. In order to prove the quantum nature of the emission we measure the second-order correlation function  $g^2/\pi$ . For both fiber coupled and free-space emission, the  $g^2(\tau)$  dips below 0,5 indicating operation in the single photon regime.

The results so far demonstrate the feasibility of 2D material single photon sources for scalable photonic quantum information processing.