

**Fakultät für Mathematik, Informatik und Physik
Universität Innsbruck**

**Ankündigung des öffentlichen Vortrags
(„defensio dissertationis“)**

im Rahmen der abschließenden kommissionellen Prüfung (Verteidigung der
Dissertation) im Doctor of Philosophy - Doktoratsstudium Physik

von

David Plankensteiner, BSc MSc

über

**“Collective Dynamics and Spectroscopy of Coupled
Quantum Emitters”**

Zeit: Montag, 08. Juli 2019, 10.15 Uhr

Ort: Hörsaal F, Technikerstraße 25 a

Inhalt:

Quantum emitters are systems with discrete energy levels, which exhibit a nonvanishing dipole coupling to the electromagnetic field. The electromagnetic field is in turn modified by this coupling such that one quantum emitter feels the presence of others in a common radiation field. The behavior of multiple emitters placed close to one another thus changes drastically as they begin to act as a collective. In this talk I will present ways to manipulate the collective dynamics of ensembles of quantum emitters in order to suppress or even exploit collective decoherence effects. I will focus on collective spontaneous emission processes which lead to effects such as super- and subradiance. In particular, I will show how subradiance can be used for efficient lossless excitation transport or an enhancement of light-matter interactions in cavity spectroscopy.

Betreuer der Dissertation: Univ.-Prof. Mag. Dr. Helmut Ritsch

Prüfungssenat: Univ.-Prof. Mag. Dr. Helmut Ritsch
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