

**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

Cosimo Carlo Rusconi

über

“Levitated Nanomagnets in the Quantum Regime”

Zeit: Donnerstag, 18. Oktober 2018, 15.00 Uhr

Ort: Hörsaal F, Victor-Franz-Hess-Haus, Technikerstr. 25a

Inhalt:

In this talk, I will present our results concerning how to describe and use the quantum degrees of freedom of a levitated nanomagnet. A theoretical model based on a quantum rigid rotor with a spin will be introduced to describe the quantum dynamics of the nanomagnet near an equilibrium point. Then, I will discuss how a non-rotating magnet can be stably levitated, despite Earnshaw's theorem, due to the quantum spin origin of its magnetization (gyromagnetic effect). Finally, I will propose applications of levitated magnets ranging from inertial and forces sensing, to the engineering of artificial quantum magnonic crystals that can be interfaced with spin qubits for quantum information science purposes.

Betreuer der Dissertation: Univ.-Prof. Dr. Josep Oriol Romero Isart

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assoz. Prof. Mag. Dr. Barbara Kraus
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