

**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 Sauerwein, BSc MSc

über

**“Multipartite Entanglement: From Transformations to
Measures ”**

Zeit: Mittwoch, 20. Februar 2019 um 14.00 Uhr

Ort: SR 1, ICT-Gebäude

Inhalt:

Entanglement plays a prominent role in quantum information theory and quantum many-body physics. Yet, it is far from being fully understood – at least in the multipartite case. A central problem in entanglement theory is to determine how multipartite entangled quantum states can be transformed via local operations and classical communication (LOCC). In this talk, I present new methods that allow to characterize LOCC transformations of a large class of states of arbitrarily large quantum systems. In particular, I show that most multipartite states can only be manipulated via LOCC in a very restricted manner. Furthermore, I describe how tools from geometry and survival analysis can be used to establish a new framework to find all possible protocols that optimally implement a given LOCC transformation. Finally, I present new measures of multipartite entanglement.

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