

**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

Katharina Schwaiger, BSc MSc

über

**“Towards the operational characterisation of multipartite
entanglement ”**

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1 Stock Süd

Inhalt:

Entanglement is the resource to overcome the natural limitations of spatially separated parties restricted to Local Operations assisted by Classical Communication (LOCC). Thus, any function which qualifies and quantifies entanglement has to be non-increasing under LOCC. We introduce two classes of operational entanglement measures, i.e. the source and accessible entanglement. Whereas the source entanglement measures from how many states the state of interest can be obtained via LOCC, the accessible entanglement measures how many states can be reached via LOCC from the state at hand. We consider here pure bipartite as well as multipartite states and derive explicit formulae for these measures.

Moreover, we apply a state-conversion based characterization of the mode-entanglement of Gaussian fermionic states (GFS). More precisely, we derive a standard form of mixed n-mode n-partite GFS up to Gaussian local unitaries and show that there exist no non-trivial Gaussian LOCC transformations among pure states. Thus, we investigate the richer classes of Gaussian stochastic and fermionic LOCC. This allows us to show how to identify the maximally entangled set (MES) of GFS, which is the multipartite generalization of the bipartite maximally entangled state.

Betreuer der Dissertation: assoz. Prof. Mag. Dr. Barbara Kraus

Prüfungssenat: assoz. Prof. Mag. Dr. Barbara Kraus
Univ.-Prof. Mag. Dr. Gregor Weihs
Univ.-Prof. Dr. Andreas Martin Läuchli Herzig (Vorsitz)