chemisch physikalische gesellschaft

Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

# EINLADUNG

zum Vortrag von


## Dr. Mario Krenn

Universität Wien, Quantenoptik, Quantennanophysik und Quanteninformation
Loschmidt-Preisträger 2018
Dissertation: Quantum Experiments with Spatial Modes of Photons in Large Real and Hilbert spaces
Betreuer: emer.O.Univ.Prof. Dr.DDr.h.c. Anton Zeilinger

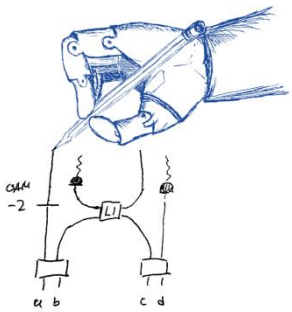

# On Computer-Inspired Experiments for Quantum Physics

**am**
**Dienstag, 27. November, um 17:30 Uhr**

**Ort:** Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

*Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals*


**Abstract**



Designing experimental setups for complex entangled states is a notoriously difficult feat. For that reason, we have developed the computer algorithm `MELVIN` which is able to find new experimental implementations for the creation and manipulation of quantum states. The discovered experiments extensively use unfamiliar and asymmetric techniques which are challenging to understand intuitively. Nevertheless, several of these computer-designed experiments have already been successfully implemented in our laboratories.

Interestingly, by analyzing `MELVIN's` proposals, we are able to discover novel techniques. One example is a novel concept of controlled entanglement generation (which we called Entanglement by Path Identity) that is based on ideas from 25 years ago; but has only now been discovered with the help of a computer algorithm. This example shows that computer designed quantum experiments can be inspirations for new techniques and ideas.