

Invitation to IQST Seminar

on Friday, May 4th, 2018, 10.30am
University of Stuttgart,
Pfaffenwaldring 57
Room 6.331



Dr. Vedran Dunjko
Max Planck Institut für Quantenoptik, Garching

Title: Machine learning and Quantum Information Processing: match or hype

Abstract: The nascent field of Quantum Machine Learning (QML) has been generating a substantial buzz in the last few years. QML research is typically driven by two basic objectives: finding ways in which quantum information processing (QIP) can help with machine learning (ML) problems, and, conversely, understanding the extent to which ML can be beneficially applied in QIP settings. In this overview talk, I will introduce basic ideas from QIP and use them to showcase how the parallels between the disciplines of QIP and ML drive these main research lines of QML. This will be substantiated through a selection of recent results which probe the potential and limitations of quantum-enhanced learning, followed by a snapshot of fresh proposals exploiting ML techniques in the context of quantum experiments. Such results have been used to suggest not only that (Q)ML applications may be among the best reasons to build quantum computers in the first place, but also that ML may find vital applications in building genuinely useful quantum computers. Whether or not such claims have merit, or are perhaps understatements, will be discussed as well.

Time permitting, the talk will finish with a more personal take on the field, which also touches the broader topic of the interplay of artificial general intelligence and quantum mechanics.

Host: Prof. Dr. Stefanie Barz, Institute for Functional Matter and Quantum Technologies; University of Stuttgart