



universität
wien

Fakultät für Mathematik

Mathematisches Kolloquium

Mittwoch, 29. Mai 2024

Sky Lounge

EINLADUNG

Richard Küng

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„Classical shadows of quantum states: scalable quantum-classical interfaces“

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Abstract:

Large-scale quantum (computing) experiments do not work in isolation. Substantial classical computing power is required to control the architecture and process its results. This necessarily creates information-transmission bottlenecks at the interface between quantum and classical realms.

In this colloquium, I will present quantum-classical interfaces that address these information-transmission bottlenecks. Dubbed classical shadows (of quantum systems), these leverage frame theory and high-dimensional probability theory to obtain a succinct classical description of the underlying quantum system. These can then be used to efficiently predict many features of the quantum system in a streaming fashion. Building on these ideas, we also establish mathematically rigorous synergies between quantum experiments (to obtain data) and machine learning (to learn how to make predictions).

14.45 Uhr: Kaffeejause

15.15 Uhr: Vortrag

vinum cum pane im Anschluss

Radu Ioan Bot
Anton Mellit
José Luis Romero