UNIVERSITÄT DUISBURG ESSEN

PHYSIK E=

Physikalisches Kolloquium

Mittwoch, 05.05.2021
13:00 Uhr
ZOOM-Online-Meeting

https://uni-due.zoom.us/j/61527991979?pwd=OHZyNktyRldiN1A2ZVhhb3Z5Q3F6dz09
Meeting-ID: 615 2799 1979, Kenncode: 614383

Superconducting qubits: Basics, state of play, and best uses

Prof. Dr. Frank Wilhelm-Mauch,
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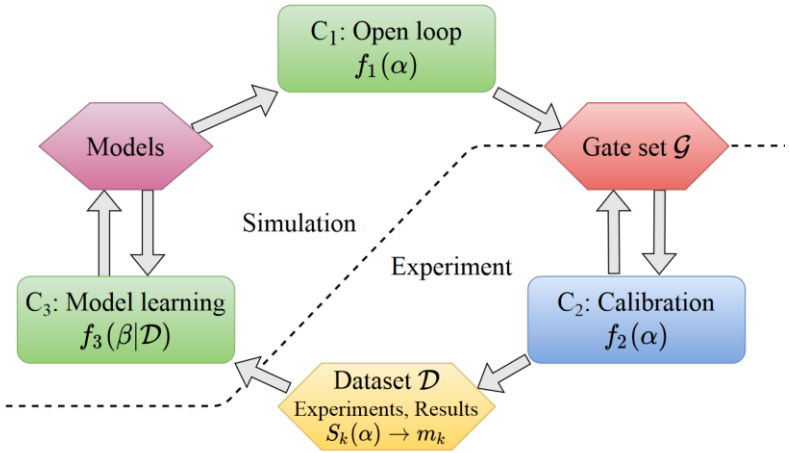

Quantum computers are a promising information processing technology beyond the von-Neumann paradigm. Superconducting integrated circuits are one of the most promising platforms for their physical implementation. I will introduce their basic workings and the state of the art in implementing quantum algorithms with them as well as the next challenges. A crucial step is the optimal translation of hardware capabilities into algorithms and quantum operations. I will describe the use of optimal control theory together with system identification guided by machine learning to that end. In the era of quantum supremacy, it is legitimate to ask if and when we will see the first applications. I will show for examples of quantum computer chemistry and optimization, how hardware design and software development go hand in hand in order to get closer to that goal.