Joint DESY and University of Hamburg Accelerator Physics Seminar

Tuesday, 07.06.2022 16:00

ZOOM video seminar (needs version 5.8+)

Quantum Computing Hardware for HEP Algorithms

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Abstract

Quantum information science harnesses the principles of quantum mechanics to realize computational algorithms with complexities vastly intractable by current computer platforms. Well known applications are found in the fields of chemistry, cryptography and materials, but there are a vast number of algorithms devised for High Energy Physics often utilizing qudits instead of qubits. One possible platform to realize high coherence qudits is by encoding the states in the modes of superconducting resonators like SRF Tesla shaped cavities. In this talk I will discuss how the quantum state in these cavities can be controlled by means of an ancilla transmon qubit. I will discuss how the quantum state in these cavities can be controlled by means of an ancilla transmon qubit. I will demonstrate some preliminary data showing the decay of the fundamental cavity mode (3 GHz) measured by the ancilla states. Finally, I will discuss the timeline of this work and the timeline of the SQMS collaboration.

W.Hillert, (Univ. HH), I.Agapov (MPY) and M.Vogt (MFL).