

SPP 1929 – Seminar

12 February 2019, 4:15 pm

Johannes Gutenberg Universität Mainz
Lecture Hall, Nuclear Physics Institute
Johann-Joachim-Becher-Weg 45, 55128 Mainz

Mark Saffmann

(University of Wisconsin-Madison)

Quantum computing with atomic qubits

Quantum computing is a few decades old and is currently an area where there is great excitement, and rapid developments. A handful of distinct approaches have shown the capability of on demand generation of entanglement and execution of basic quantum algorithms.

One of the daunting challenges in developing a fault tolerant quantum computer is the need for a very large number of qubits. Neutral atoms are one of the most promising approaches for meeting this challenge. I will give a snapshot of the current status of quantum computing with neutral atom qubits. The atomic physics underlying our ability to control and entangle atomic qubits will be described, and I will show how one of the most complicated atoms in the periodic table may lead to some simple solutions to hard problems.

Fluorescence image of an array of 49 trapped atomic qubits.

