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Quantum simulations with trapped ions

Many quantum mechanical phenomena cannot be efficiently simulated with classical computers. Thus another, more controllable, quantum system is required to study them, a so called quantum simulator. The ongoing progress in quantum technologies has enabled experimental implementations of quantum simulation, towards the ultimate goal of a universal quantum simulator. In this talk I will introduce the basic concepts underlying quantum simulation and discuss some platforms that have been used for experimental implementations. In particular I will focus on trapped ions, which offer an exquisite degree of control and flexibility.