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Title:
Coulomb crystallized ions as basis for quantum information technology

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A practical implementation of quantum information science has to rely on physical systems where individual components can be controlled at the quantum level without perturbations from the environment, while at the same time these components can be made interacting with each other in a very efficient way at will. Despite these stringent requirements, at least a handful of systems are today seriously considered for future quantum information technology.
Among those are atomic ions that are trapped and laser-cooled into exotic solid-state structures named Coulomb crystals.

In the talk, I will discuss why such crystals have a great potential within quantum information science by presenting results from leading groups worldwide as well as from my own research at AU.