

Quantum computing in rare-earth-ion-doped crystals

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Quantum computers are predicted to achieve significant speed-ups for certain applications when compared to classical computers. In this talk, I give an overview of quantum computing in rare-earth-ion-doped crystals, including the results of recent theoretical investigations that show that quantum processor nodes constructed in these materials can be tailored to contain between a few tens and 1000 qubits. Furthermore, the average number of qubits each qubit can interact with, denoted by the connectivity, can be partly tailored to lie between just a few and roughly 100.

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