

Perspective for scalable quantum information processing with trapped ions

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In the first part, I will review the status of experiments targeting quantum computing with trapped ions. I will argue that with trapped ions the DiVincenzo criteria for a universal quantum computing device are met and that all operations have been demonstrated with sufficient fidelity to allow for fault-tolerant quantum computing. In the second part of my presentation, I will address the open questions towards a scalable quantum information processing device with trapped ions, particular those of scalability, speed, and stability of the control parameters.