



DEPARTMENT OF PHYSICS AND ASTRONOMY

COLLOQUIUM *ZOOM & IN-PERSON EVENT*



Trapped ions for quantum information science

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The prospect of harnessing quantum mechanics to help researchers perform certain calculations is an exciting opportunity (at least for those faced with problems that look tractable to this approach). A diverse set of physical devices are currently being prototyped that may be able to use this quantum advantage, and each platform has its strengths and weaknesses. I will provide an introduction to the use of trapped atomic ions for quantum processing, where two, long-lived states in each atom are used to define a qubit. Co-trapped ions are then able to engage in conditional quantum logic through the bus of their shared normal modes of motion in the trap. While extension of this idea will necessarily involve adding more and more atoms, I will also discuss a perhaps-overlooked possibility of using more than two levels per atom to improve the computational power of current trapped atom processors.



Thursday, September 7, at 3:55 PM

ZOOM EVENT

Via Zoom: <https://zoom.us/j/99879004873?pwd=Vkp2dHJDdU9tcnpNUWp5SFk4QVIvQT09>

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