Abstract Submitted
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Rapid ion cooling by controlled collision HOI KWAN LAU, University of Toronto — I propose a method to cool trapped ions by controlled collisions. Motional excitation of a hot ion is transferred to a coolant ion due to Coulomb interaction when they are brought to proximity. The whole process can be conducted diabatically, involving only a few oscillation periods of the harmonic trap. Our proposal is useful for rapid recooling of ion qubits during quantum computation and fast cooling of an ion whose mass is significantly different from the coolant ion.

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