

Abstract Submitted
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Multiparticle Entanglement in one step TARUN DUTTA, CQT, National University of Singapore — In this presentation, I will show how the linear ramp dynamics of phonons in a one-dimensional trapped ion system can be used for both generating multiparticle entangled states and motional state cooling of a string of trapped ions where all the trapped ions are prepared in a state of transverse motional mode. These phonons are well known to be described by an effective Bose Hubbard model where the onsite potential of this model is induced by an optical dipole potential which can be created by an off-resonant standing wave to individual ion. I will present a specific ramping protocol which involves a site specific dynamical tuning of the onsite potential of the model leads to generate entangled state and to achieve transverse motional state cooling without involving electronic states of the ions.

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