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Towards understanding thermodynamics and energy transport in strings of trapped ions MICHAEL RAMM, THANED PRUTTIVARASIN, ISHAN TALUKDAR, HARTMUT HAEFFNER, UC Berkeley — We report experiments on laser induced heating of ions confined in a linear Paul trap. Specifically, we investigate the mechanism of melting of a crystallized ion chain due to heating by light detuned blue from an atomic resonance. In these experiments, we observe the decay of ion fluorescence as we shine laser light on either the entire ion string or a small subset. From these measurements we hope to extract information on the thermodynamic properties of such Coulomb crystals. Understanding these properties, together with the ability to address individual ions will facilitate the study of excitation transfer dynamics along the chain.

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