

Abstract Submitted  
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**Internuclear-separation dependent ionization induced vibrational cooling in I<sub>2</sub> molecules**<sup>1</sup> LI FANG, GEORGE GIBSON, University of Connecticut — We present simulations and experimental results on the vibrational coherence induced by “*R*-dependent ionization,” also known as Lochfrass. The results are consistent and show that “*R*-dependent ionization” can lead to vibrational cooling. We attribute this cooling effect to the dissipative nature of the scheme for preparing the vibrational wave packets. In contrast, we show calculations for a non-dissipative scheme, bond softening, which does not lead to cooling. We compare the pulse-width and intensity dependence of the vibrational amplitude and average internuclear-separation. Finally, we compare trajectories of vibrational coherence from a thermal ensemble and from a single state as a function of intensity in a phase diagram for the two schemes.

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