

Abstract Submitted
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Adiabatic Rapid Passage Forces for Laser Cooling¹ JOHN ELGIN,
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— Optical forces from Adiabatic Rapid Passage (ARP) have been shown to be significantly larger than the ordinary radiative force even outside the usual adiabatic parameter range of $\Omega_0 \sim \delta_0 \gg \omega_m \gg \gamma$. Here Ω_0 is the peak Rabi frequency, $2\delta_0$ is the sweep range, ω_m is the repetition rate, and $\tau \equiv 1/\gamma$ is the excited state lifetime. For ARP to be useful for laser cooling it needs to be not only strong, but also dependent on atomic velocity v . We have shown preliminary v -dependent measurements with an apparatus having two independent counter-propagating chirped pulses. Having further improved our ability to measure and control the pulse shape and frequency chirp we present our newest v -dependent data and draw some comparisons between ARP and the bichromatic force.

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