

Abstract Submitted
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Collisional cooling of ultra-cold atom ensembles LUDWIG MATHEY, NIST, Gaithersburg, and JQI, UMD, EITE TIESINGA, NIST, Gaithersburg, PAUL JULIENNE, NIST, Gaithersburg, CHARLES CLARK, NIST, Gaithersburg — We study a new cooling mechanism, collisional cooling, which capitalizes on the energy selectivity of inelastic scattering in a Feshbach resonance. We study this mechanism by simulating an ensemble of fermionic atoms in the quantum degenerate regime in the presence of such a resonance via a quantum kinetic approach. We find that by tuning the resonance energy appropriately, the temperature of the system can be lowered to a temperature comparable to the width of the resonance, and that thermalization is achieved through elastic scattering, which is also strongly enhanced due to the presence of the resonance.

Ludwig Mathey
NIST, Gaithersburg, and JQI, UMD

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