

Abstract Submitted
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Evaporative cooling of reactive polar molecules confined in a 2D geometry¹ BIHUI ZHU, JILA, Univeristy of Colorado at Boulder, GOULVEN QUÉMENER, Laboratoire Aimé Cotton, CNRS, Université Paris-Sud 11, JOHN BOHN, ANA MARIA REY, MURRAY HOLLAND, JILA, Univeristy of Colorado at Boulder — Recent experimental developments in loading ultracold $^{40}\text{K}^{87}\text{Rb}$ molecules into quasi-2D traps together with the tunability of the ratio between elastic and inelastic interactions by controlling a DC electric field are opening the door for evaporative cooling of reactive polar molecules. We use Monte Carlo simulations and semianalytic models to study experimental parameter regimes in which evaporative cooling is feasible. Specifically, we investigate how the anisotropic character of dipole-dipole collisions together with the reduced dimensionality affect the efficiency of evaporative cooling. We also investigate anti-evaporation effects induced by chemical reactions that take place when more than one vibrational state is populated along the axial direction.

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