

Ultracold Collisions of Polyatomic CaOH Molecules

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Ultracold collisions of the polyatomic species CaOH are considered, in internal states where the collisions should be dominated by long-range dipole-dipole interactions. The computed rate constants suggest that evaporative cooling can be quite efficient for these species, provided they start at temperatures achievable by laser cooling. The rate constants are shown to become more favorable for evaporative cooling as the electric field increases. Moreover, long-range, weakly-bound dimer states $(\text{CaOH})_2$ are predicated to occur, having lifetimes on the order of microseconds.