

Abstract Submitted
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Collisional decoherence of molecular wavepackets at ultracold temperatures CHRISTOPHER HEMMING, ROMAN KREMS, Department of Chemistry, University of British Columbia — We present an analysis of collisional decoherence of molecular superposition states in an ultracold gas. The approach is based on the derivation of a linear differential equation for the time evolution of the reduced density matrix for molecular rotational states. The tetradic decoherence operator is expressed in terms of collision T matrix elements and the decoherence rate is obtained from eigenvalues of this operator. We consider collisional decoherence of rotational wavepackets in a bath of ultracold atoms and decoherence due to identical molecule – molecule scattering.

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