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Feshbach Molecule Formation in Finite-Temperature Quantum Gases

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An exciting development in the field of ultracold atomic gases is the ability to create diatomic molecules by adjusting a Feshbach resonance in the interatomic potential. An extraordinary application of this capability has been to dynamically traverse the BEC-BCS crossover in Fermi gases. While a great deal of attention has focused on equilibrium properties in the *superfluid* regime, a complete theoretical understanding of the dynamics of molecule formation in a *normal* gas is still lacking. In a recent article [Williams *et al.*, J. Phys. B: At. Mol. Opt. Phys. bf37, L351 (2004)], we presented coupled Boltzmann-like kinetic equations for the atoms and molecules. In this talk, we use our approach to understand the saturation behavior of the molecular conversion efficiency that is observed in experiments (eg. Hodby *et al.*, cond- mat/0411487).