

Abstract Submitted  
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**Microwave field modification of elastic and inelastic collisions of cold and ultra cold polar molecules** SERGEY ALYABYSHEV, ROMAN KREMS, University of British Columbia — We present a detail study of microwave laser field effects on collisions of polar molecules and atoms in the presence of a static magnetic field. We use the dressed-state formalism to describe the interaction of the radiation field with collision complex and perform rigorous scattering calculation to study Feshbach scattering resonances and inelastic spin changing transitions in collisions of CaH and NH molecules with He atoms. Our results indicate that microwave fields enhance collisional spin relaxation and can significantly modify the position and width of magnetic Feshbach resonances. We show that Feshbach resonances and spin-changing transitions in cold and ultracold collisions of polar molecules can be efficiently manipulated with microwave fields of moderate strength and discuss the mechanism of microwave field control of molecular collisions.

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