

# Light Induced Conical Intersections - LICI

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The role of conical intersections (CIs) in different types of chemical reactions including molecular photochemistry has been amply studied in the literature. A CI can only exist for molecules that have more than three atoms. Therefore, in diatomic molecules two electronic states that belong to the same point group symmetry exhibit an avoided-crossing and there is no CI for diatomic molecules.

In 2008 we have shown how light can induce CIs in diatomic molecules. These light-induced CIs (LICIs) emerge from the fact that light couples electronic states and these coupling involves the vibrational and rotational degrees of freedom. When standing lasers are used, the LICIs involve in addition couplings of the above degrees of freedom with that of the center of mass. Consequently, LICIs are expected to play a key role in photo-induced reactions and in trapping of cold molecules in optical traps and have an impact on the formation of molecular optical lattices. In polyatomics the interplay of the various nuclear degrees of freedom can be exploited to manipulate and may be control processes via LICIs. In this talk we will review the LICI phenomenon and its effect on photo-induced dynamics. We also sketch future planned studies that might open new fields of research on large variety of topics.

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