

Conical intersections appear in the potential energy surfaces of molecules which consist of more than two atoms. For principal reasons, no conical intersections exist in the case of free diatomic molecules.

We will show that diatomic molecules which interact with the standing laser waves produce periodic arrays of laser induced conical intersections, such that the rovibrational and the translational molecular motions are strongly coupled to each other. Similarly as for the usual conical intersections in field free polyatomic molecules, also the laser induced conical intersection introduces infinitely strong local non-adiabatic couplings between the involved nuclear degrees of freedom. An effect of the laser induced conical intersections on trapping of cold diatomic molecules by light will be discussed. Also an impact of the laser induced conical intersections on photodissociation molecular resonances will be mentioned.

Based upon an article

Nimrod Moiseyev, Milan Sindelka, and Lorenz S. Cederbaum,  
"Laser-induced conical intersections in molecular optical lattices",  
accepted as fast track communication to Journal of Physics B:  
Atomic, Molecular, and Optical Physics.