

BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA



INSTITUTO DE FÍSICA
“Luis Rivera Terrazas”



SEMINARIO
“DR. JESUS REYES CORONA”

“Intense field molecular photodissociation: The adiabatic views”

Ph. D. R. Lefebvre
Institut des Sciences Moléculaires d'Orsay, (ISMO),
CNRS and UMR8214, Bât. 350, Université Paris-Sud,
F91405 Orsay, France.

The adiabatic approach is often used to obtain approximate solutions of the time-dependent Schrödinger equation. This is usually done by introducing the instantaneous solutions of the wave equation. We examine this method for the case of a molecular system exposed to a laser pulse. Even when the conditions of a slow variation of the parameters are not fulfilled, another method referred to as the adiabatic Floquet approach has been used in recent works. We show that a strict application of the adiabatic method with instantaneous solutions leads to a photodissociation mechanism which is very inefficient and different from that which is in current consideration. The so-called adiabatic Floquet approach is not based on the instantaneous states and should be, in fact, called quasi-adiabatic. For the example considered here (photodissociation of H_2^+) the direct solution of the time-dependent Schrödinger equation confirms the validity of this approach.

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