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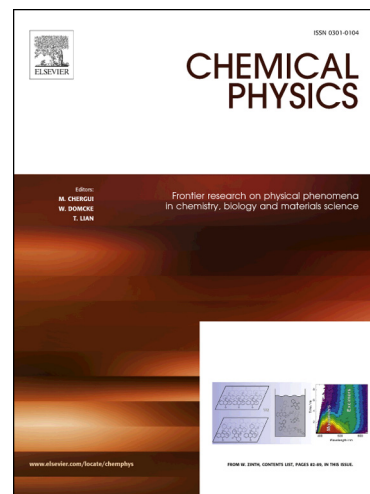
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Collective effect of light-induced and natural nonadiabatic phenomena in the dissociation dynamics of the NaI molecule

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Abstract

Natural and light-induced nonadiabatic effects are ubiquitous in many photochemical and photophysical processes. Here we study the interplay between them when they are present simultaneously in a molecular system. Our showcase example is the NaI molecule. Solving the time-dependent nuclear Schrödinger equation the photodissociation rate and the angular distribution of the molecular photofragments are calculated and discussed at several resonant laser energies and intensities. Obtained results clearly demonstrate that the dissociation rate and the angular distribution of the NaI photofragments can be considered as clear fingerprint of a collective effect of light-induced and natural nonadiabatic phenomena.

Keywords: photodissociation;

nonadiabatic coupling term; external electric field; light-induced nonadiabatic phenomena;

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