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Manipulating photodissociation dynamics by frequency chirped laser pulses[1] ANDRAS CSEHI, GABOR HALASZ, University of Debrecen, LORENZ CEDERBAUM, University of Heidelberg, AGNES VIBOK, University of Debrecen — The photodissociation dynamics of the D2+ molecular ion is investigated theoretically in the presence of linearly as well as so-called arbitrarily varying frequency laser pulses. After a sudden ionization of the neutral system, the impact of several chirped probe pulses is explored in terms of total dissociation probabilities, kinetic energy release and angular distribution of the photofragments. All the calculated quantities are presented as a function of the delay time of the probe pulse and a comparison between positive negative as well as zero chirp situations is discussed. Furthermore, by tracing the maxima of the vibrating nuclear density, special kind of frequency chirps are constructed with the aim of maximizing the dissociation probability of the system. Our treatment of the light-matter interaction incorporating strong nonadiabaticity, is carried out in the light-induced conical intersection (LICI) framework. The phase modulation of the pulses makes possible the modification of several properties of the created LICI, leading to interesting observations in the studied quantities.

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