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Femtosecond photodissociation dynamics of chloriodomethane in the first absorption band

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Abstract

The real time photodissociation of chloriodomethane ($\text{CH}_2\text{I}(\text{I})$) in the first absorption band at 268 nm is reported in comparison with the well-known methyl iodide (CH_3I) in order to investigate the halogen-atom substituent effect on the time-resolved photodynamics of halomethanes. Femtosecond velocity map imaging measurements in conjunction with resonance enhanced multiphoton ionization (REMPI) to detect the iodine fragments have been performed to obtain translational energy and angular distributions and the photodissociation reaction times. High level *ab initio* and on-the-fly trajectory calculations have been carried out to rationalize the experimental results in terms of the excited states involved and the dissociation mechanisms.

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