

CONTROLLING DISSOCIATIVE DOUBLE IONIZATION OF ETHANE WITH ELLIPTICAL POLARIZED STRONG FIELDS

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Laser control of chemical reactions has been a hot topic in recent years. Ethane, which has several dissociative double ionization channels under strong laser fields has been subjected to intense investigation. With the aid of newly developed coincidence detection imaging system, we demonstrate that the branching ratios of dissociative double ionization channels of ethane can be controlled by varying the ellipticity of the intense ultrashort laser pulses. The Methyl ion formation channel and proton formation channel show a significant yield changes, producing the highest and lowest at ellipticity of 0.6 respectively. We attribute such a control to both angle dependent ionization and intensity dependent ionization to excited dication states.