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Valence shell photoionization of SF_6 and high harmonic generation JOBIN JOBIN, Texas A&M University, K. FULFER, B. WILSON, E. POLIAKOFF, Louisiana State University, C. TRALLERO, S. MONDAL, A.-T. LE, C.-D. LIN, Kansas State University, ROBERT LUCCHESE, Texas A&M University — When an atom or molecule is exposed to highly intense laser fields, the target can emit coherent radiation at photon energies which are multiples of incident laser energy. This process is known as High-order harmonic generation (HHG). There has been experimental and theoretical investigation of HHG for atoms and simple linear molecules. However, there have been few such studies for non-linear polyatomic molecules. In the current work, we investigate HHG for SF_6 experimentally and theoretically. We employ quantitative rescattering theory (QRS) which makes use of the magnitude and phase of the dipole transition matrix elements for photoionization. For calculating dipole transition matrix elements we employ the ePolyscat static-exchange method. The features seen in the computed results will be compared to corresponding features in the measured HHG spectrum. The calculation is repeated for different polarization of incident laser and different intensities. The analysis allows us to reproduce then understand experimentally measured HHG spectra from SF_6. Additionally, the valence shell photoionization parameters are also compared with several other theoretical and experimental results.

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