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**Accurate retrieval of atomic and molecular structure from high-order harmonic spectra**[1] ANH-THU LE, Kansas State University, TORU MORISHITA, University of Electro-Communications, Tokyo, Japan, CHII-DONG LIN, Kansas State University — We show that high-order harmonic generation (HHG) yield can be expressed as the product of a returning electron wave-packet and photo-recombination cross section, and the shape of the returning wave-packet is largely independent of the target. By comparing the harmonic spectra generated from different targets, accurate structural information, including the phase of recombination amplitude, can be retrieved. The model can readily be extended to molecules where theoretical calculation of HHG spectra itself is still a challenge. We show on the example of molecular ion $H_2^+$ that HHG spectra, including positions of interference minima, are quite accurately reproduced by using the wave-packet from the Lewenstein model. This result opens up the possibility of studying the target structure of complex systems and their time evolution, from the HHG spectra generated by short laser pulses.

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