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DC and subcycle-resolved AC Stark shifts in Helium

AIHUA LIU, UWE THUMM, Kansas State University — We are developing a finite element discrete variable representation (FE-DVR) code to model the response of two-electron atoms to ultra-short pulses of EM radiation. Our first numerical results for the DC stark shift of helium deviate significantly from previous [1] single-active-electron (SAE), but are in close agreement with improved SAE calculations that include the effect of core polarization in the external field. For $3 \times 10^{14}$ W/cm$^2$ infra red fields, we calculate sub-IR-cycle- resolved instantaneous (AC) level shifts of low-lying bound He states that also strongly deviate from the SAE prediction [1]. We plan to apply our code to model recently measured subcycle time-resolved absorption spectra [2].


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