

Coherent extreme-ultraviolet emission generated through frustrated tunneling ionization, studied by strong field approximation

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Strong field approximation (SFA) model provides an accurate and efficient way to study tunneling-ionization-triggered phenomena such as above-threshold ionization (ATI) [1] and high-harmonic generation (HHG) [2]. In the model, excluding the ground, the other atomic or molecular bound states are often neglected. On the other hand, some of the tunneling-ionized electrons can be excited to the higher-lying bound states, which is known as frustrated tunneling ionization (FTI) [3]. The FTI process also can lead to a coherent extreme-ultraviolet (EUV) emission [4] through free induction decay (FID) [5].

In this presentation, strong field approximation model for the FTI and the subsequent EUV emission is provided [6]. The validity of the model is supported from the comparison between results of the SFA model and the ones from the time-dependent Schrödinger equation. Our experimental results are also well explained by the SFA model [4].

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