Abstract Submitted
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Dielectric response effects in time-resolved photoemission from metal surfaces[1] CHANG-HUA ZHANG, UWE THUMM, Kansas State University — We investigate dielectric response effects in attosecond time-resolved photoelectron (PE) spectra from metal surfaces [1]. We model the response of the metal due to excitation of bulk and surface plasmons by the creation and propagation of the PE in terms of an effective potential that depends on the velocity of the PE. Using this dynamical image potential, we calculate IR-streaked XUV-photoemission spectra and compare them with spectra obtained with the corresponding *static* image potential. We find a significant relative temporal shift [2] in photoemission from the conduction band for calculations with static and dynamical image potentials. We further analyze the dependence of this relative shift on the XUV frequency as well as on solid-state characteristics, such as the bulk plasmon frequency, the IR skin depth, and the PE transport in the solid [3].

[1] C.-H. Zhang and U. Thumm, Phys. Rev. Lett. 102, 123601 (2009); Phys. Rev. A 80, 032902 (2009).
[2] C.-H. Zhang and U. Thumm, Phys. Rev. A 82, 043405 (2010).
[3] C.-H. Zhang and U. Thumm, Dielectric response effects in attosecond time-resolved streaked photoelectron spectra of metal surfaces, submitted.

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