

Abstract Submitted  
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**Dynamical image-charge effects in attosecond time-resolved streaked photoelectron spectra of metal surfaces**<sup>1</sup> CHANG-HUA ZHANG, UWE THUMM, Kansas State University — The release of conduction-band electrons from a metal surface by a sub-femtosecond extreme ultraviolet (XUV) pulse, and their propagation through and near the solid [1], provokes a dielectric response in the solid that acts back on the photoelectron wave packet. We calculated the (wake) potential associated with this photoelectron self-interaction in terms of bulk and surface plasmon excitations and show that it induces a considerable, XUV-frequency-dependent temporal shift in laser-streaked XUV-photoemission spectra [2], suggesting the observation of the ultrafast solid-state dielectric response in contemporary streaked photoemission experiments.

[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).

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