

Abstract Submitted
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Resonant final-state effects in time-resolved photoemission spectra from Ni(111) surfaces.¹ MARCELO AMBROSIO, UWE THUMM, Kansas State University — Measured time-resolved interferometric (RABBITT) photoelectron spectra from Ni(111) surfaces recently indicated a final-state-induced increase in the photoemission time delays at distinct photoelectron kinetic energies [1]. Motivated to examine and understand these final-state shape resonances, we calculated time-resolved spectra and relative RABBITT phases from the $\Lambda 3\beta$ and $\Lambda 3\alpha$ bands of Ni(111) for the XUV-pulse-train and IR-pulse parameters of Ref. [1]. Modeling the photoelectron final-state wavefunction subject to an oscillatory model potential [2] and the IR laser field, we trace the resonantly increased photoemission time delay to an electron-probability-density accumulation inside the substrate which occurs when the local electronic de Broglie wavelength matches the substrate lattice spacing [3]. [1] Tao et al., Science 353, 62 (2016). [2] Chulkov et al., Surf. Sci. 437, 330 (1999). [3] Ambrosio and Thumm, submitted for publication.

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