




Ultrafast extreme ultraviolet holography: dynamic monitoring of surface deformation


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Abstract

We demonstrate femtosecond time-resolved dynamic Gabor holography using highly coherent extreme ultraviolet light generated by high harmonic upconversion of a femtosecond laser. By reflecting this light from an impulsively heated surface, we implement a simple and robust single-reflection geometry for phase-sensitive holographic detection at extreme UV wavelengths. Using this setup, we study the ultrafast deformation and subsequent acoustic oscillations within a thin metal film. These measurements exhibit subpicometer spatial sensitivity in the vertical dimension.

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