

Abstract Submitted
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Reconstruction of crystal band structure from the power spectrum of strong-field generated high harmonics CHANG-MING WANG, Department of Physics, National Taiwan University, Taipei, Taiwan, TAK-SAN HO, Department of Chemistry, Princeton University, Princeton, New Jersey, USA, SHIH-I CHU, Department of Chemistry, University of Kansas, Kansas, USA — The study of high harmonic generation in solid driven by intense laser fields is a subject of much current interest. Recently we introduce a new optimization method to directly reconstruct the band structure of the crystal from the power spectrum of strong-field generated high harmonics. Without loss of generality, the reconstruction is formulated for a one-dimensional single band model as a minimization problem and solved by a derivative-free unconstrained optimization algorithm-NEWUOA. The method can be readily generalized to treat multi-band problems. Numerical simulations are presented to demonstrate the applicability of the method, and the reconstructed band structure is found to be in excellent agreement with the exact one. It is also shown that our optimization method remains robust and efficient even starting from the poorly guessed band structure.

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