

Abstract Submitted  
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**Direct optimization of isolated attosecond pulse contrast** HIROKI MASHIKO, THOMAS PFEIFER, MARK ABEL, PHILLIP NAGEL, WILLEM BOUTU, JUSTINE BELL, COLBY STEINER, ANNELESE BECK, YANWEI LIU, DANIEL NEUMARK, STEPHEN LEONE, Chemical Sciences Division and Ultrafast X-Ray Science Laboratory, Lawrence Berkeley National Laboratory — Isolated attosecond pulses are a powerful tool for studying electron dynamics. However, the pulse isolation is strongly dependent on the carrier-envelope phase (CEP) of a short pulse in the high-harmonic generation process. We introduce a direct optimization method of the isolated attosecond pulse contrast. By the attosecond streak-camera principle, the photoelectrons produced by the attosecond pulse acquire momentum impulses according to the vector potential of the streaking laser field. By scanning the CEP and measuring the photoelectron spectrum produced by the combined attosecond pulses and the harmonic driver pulse at zero relative time delay, the energy ratio between the main pulse and the neighbor satellite pulses can be measured. An isolated pulse of contrast 3.3:1 with 430 as duration was optimized in experiments here. The method allows quick control over the crucial contrast parameter in experimental applications.

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