Forward and hybrid path-integral approaches with full Coulomb distortion

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We propose a strong-field path integral method with full Coulomb distortion. The electrons' orbits are forward propagated, and we contrast the results with those from a hybrid forward-boundary approach. In the forward method, we derive a non-adiabatic ionization rate from the Coulomb quantum-orbit strong-field approximation (CQSFA), which includes sub-barrier Coulomb corrections. We show that the sub-barrier Coulomb corrections broaden the resulting PMDs and improve the agreement of the rate-based method with the hybrid forward-boundary CQSFA and direct solution of the time-dependent Schrödinger equation. We assess the influence of biased sampling on the holographic patterns and explain our results using the initial to final momentum mapping.