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**Chaotic Ionization of a Rydberg Atom Subjected to Alternating Kicks** KORANA BURKE, KEVIN MITCHELL, University of California Merced —  
The ionization of highly excited Rydberg atoms subjected to periodic electric field pulses has been the focus of a number of recent experimental studies. We present a theoretical analysis for such systems in the case of periodic alternating positive and negative kicks. Under such conditions, the electron dynamics is chaotic. Our analysis shows how the chaotic ionization process can be understood in terms geometric structures called homoclinic tangles, which form a kind of “leaky” separatrix in phase space. Using this geometric approach, we propose an experimental protocol to directly visualize the tangle structure within the ionization data.

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