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Controlling Sub-cycle Instantaneous Optical Chirality in the Photoionization of Chiral Molecules

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Our study shows a sub cycle chiral response between a light pulse with zero total chirality, and a chiral molecule. We engineer an electric field whose instantaneous chirality changes sign every half cycle, and observe an instantaneous chiral response. The response can be controlled by changing the temporal behavior of the pulse, on a sub cycle resolution. We show qualitative agreement between experiment and theory.

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