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Visualizing Electronic Chirality and Berry's Phases in Graphene Systems Using Photoemission with Circularly Polarized Light YANG LIU, GUANG BIAN, TOM MILLER, TAI-CHANG CHIANG, University of Illinois, Urbana-Champaign — Electronic chirality near the Dirac point is a key property of graphene systems, which is revealed by the spectral intensity patterns as measured by angle-resolved photoemission spectroscopy under various polarization conditions. Specifically, the strongly modulated circular patterns for monolayer (bilayer) graphene rotate by ± 90 degrees (± 45 degrees) in changing from linearly to circularly polarized light; these angles are directly related to the phases of the wave functions and thus visually confirm the Berry's phase of π (2π) around the Dirac point. The details are verified by calculations.

Yang Liu
University of Illinois, Urbana-Champaign

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