

Abstract Submitted
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Chiral structure and mixed parity anomalies in graphene-related systems AKIHIRO TANAKA, Natl. Inst. for Materials Sci. — We reanalyze the chiral symmetry structure of graphene and its variants (boron-nitride sheets, bond alternated graphene, etc) using a representation of Dirac fermions previously employed by the author in a search for topological effects in the pi-flux state of a square lattice electron system (PRL **95** 036402 (2005)). We find that the electromagnetic responses of nontopological insulators to curvature-induced gauge fields mimics in an interesting way the responses of topological insulators of the Haldane/Kane-Mele category to conventional (Maxwellian) gauge fields.

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