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Chiral magnetic effect in two-band lattice model of Weyl semimetal MIN-FONG YANG, Tunghai University, MING-CHE CHANG, National Taiwan Normal University — Employing a two-band model of Weyl semimetal, a definite result on the existence of the chiral magnetic effect (CME) is established within the linear-response theory. The crucial role played by the limiting procedure in deriving correct transport properties is clarified. Besides, in contrast to the prediction based on linearized effective models, the value of the CME coefficient in the uniform limit shows nontrivial dependence on various model parameters. Even when these parameters are away from the region of the linearized models, such that the concept of chirality may not be appropriate, this effect still exists. This implies that the Berry curvature, rather than the chiral anomaly, provides a better understanding of this effect.

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