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Acoustic Faraday rotation in Weyl semimetals DONGHAO LIU, JUNREN SHI, Peking Univ — We investigate the phonon problems in Weyl semimetals, from which both the phonon Berry curvature and the phonon Damping could be obtained. We show that even without a magnetic field, the degenerate transverse acoustic modes could also be split due to the adiabatic curvature. In three dimensional case, acoustic Faraday rotation shows up. And furthermore, since the attenuation procedure could distinguish the polarized mode, single circularly polarized acoustic wave could be realized. We study the mechanism in the novel time reversal symmetry broken Weyl semimetal. New effects rise because of the linear dispersion, which give enlightenment in the measurement of this new kind of three-dimensional material.

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