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Theory of novel one-magnon excitation induced by electric fields in cycloidal spin magnets SHIN MIYAHARA, Japan Science and Technology Agency, NOBUO FURUKAWA, Aoyama Gakuin University — We propose a new mechanism to induce a novel one-magnon excitation by electric-field component of light in cycloidal spin states. We calculated optical spectra in the ycloidal spin structures as observed in multiferroic perovskite manganites $R\mathrm{MnO_3}$ where novel magnetic excitations induced by electric-field component of light are observed. When symmetric pairs of spins dependent electric polarizations are introduced, we have light absorptions at terahertz frequencies with one- and two-magnon excitations driven by electric-field components. Our results show that some parts of optical absorption peaks observed experimentally at terahertz frequencies are one-magnon excitation absorptions.

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