

Abstract Submitted
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Optical Signatures of Topological Insulators¹ MING-CHE CHANG,
National Taiwan Normal Univ., Taipei, Taiwan, MIN-FONG YANG, Tunghai Uni-
versity, Taichung, Taiwan — The axion coupling in topological insulators couples
electric polarization with magnetic field, and magnetization with electric field. As a
result, the usual laws of electromagnetic wave propagation are modified. We report
on the Fresnel formula for the reflection of electromagnetic wave at the interface of
materials with different axion couplings. The Brewster angle and the Goos-Hänchen
effect are also studied. We find that, because of the axion coupling, in order to realize
the Brewster-angle condition, the incident polarization should be rotated away from
the plane of incidence. The maximum angle of rotation is $\pi/4$ when both materials
have nearly the same refraction indices. This offers a convenient way to determine
the axion angle by optical measurement.

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Ming-Che Chang
National Taiwan Normal Univ.

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