

桑德國際有限公司

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A $\mathbb{Z}_2$ -invariant is defined as $I = \int d^3x \, \text{Tr} \left(\frac{1}{2} \epsilon^{\mu\nu\rho} F_{\mu\nu} F_{\rho} \right)$, where $F_{\mu\nu} = \partial_\mu A_\nu - \partial_\nu A_\mu$ is the field strength tensor, and A_μ is the gauge field. The $\mathbb{Z}_2$ -invariant is a topological invariant, and it is invariant under the $\mathbb{Z}_2$ -gauge transformation.

Figure 3.7 shows the $\mathbf{k}$ dependence of the energy bands $\epsilon_{\mathbf{k}}^{(s)}$ of the s th band of the crystal. The energy bands are plotted against the wave vector $\mathbf{k}$ in the first Brillouin zone. The energy bands are labeled with the band index s . The energy bands are plotted against the wave vector $\mathbf{k}$ in the first Brillouin zone. The energy bands are labeled with the band index s .

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