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Phonons in Bi$_2$Te$_3$ and Bi$_2$Se$_3$ Thin Films$^1$ SHANG-FEN REN, Illinois State University, WEI CHENG, Beijing Normal University — Bi$_2$Te$_3$ and Bi$_2$Se$_3$ are topological insulators attracted great research attention in recent years. In this research, some of calculated results on phonons in Bi$_2$Te$_3$ and Bi$_2$Se$_3$ bulk and single quintuple thin films are presented. The effects of spin-orbit couplings on phonon properties in these materials are discussed. Some features of Raman observations of these materials are explained.

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