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Quantum dot in Topological Insulator Nanofilm: energy spectra and optical transitions THAKSHILA HERATH, Georgia State Univ, PRABATH HEWAGEEGANA, University of Kelaniya, VADYM APALKOV, Georgia State University — We introduce a quantum dot in topological insulator nanofilm as a bump at a surface of nanofilm. Such quantum dot can localize an electron if the size of the dot is large enough, > 5 nm. The quantum dot in topological insulator nanofilm has two types of states, corresponding to "conduction" and "valence" bands of topological insulator nanofilm. We study the energy and optical (intraband and interband) spectra of such defined quantum dots and their dependence on the dot parameters. Both intraband and interband optical transitions have the same selection rules. While the interband absorption spectra have multi-peak structure, the intraband spectra has one strong peak and a few weak high frequency satellites.

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