

Abstract Submitted
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Robust Level Coincidences in the Subband Structure of Quasi 2D Systems¹ R. WINKLER, Northern Illinois University and Argonne National Lab , L.Y. WANG, Y.H. LIN, C.S. CHU, National Chiao Tung University, Hsinchu, Taiwan — Recently, level crossings in the energy bands of crystals have been identified as a key signature for topological phase transitions. In general, three independent parameters must be tuned appropriately to bring two quantum levels into degeneracy. Using realistic models we show that for Bloch electrons in a crystal the parameter space controlling the occurrence of level coincidences has a much richer structure than anticipated previously. In particular, we identify cases where level coincidences depend on only two independent parameters thus making the level coincidences robust, i.e., they cannot be removed by a small perturbation of the Hamiltonian compatible with the crystal symmetry. We consider HgTe/CdTe quantum wells as a specific example. (See arXiv:1011.xxxx)

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