

# Topological phase diagram of mercury cadmium telluride quantum wells

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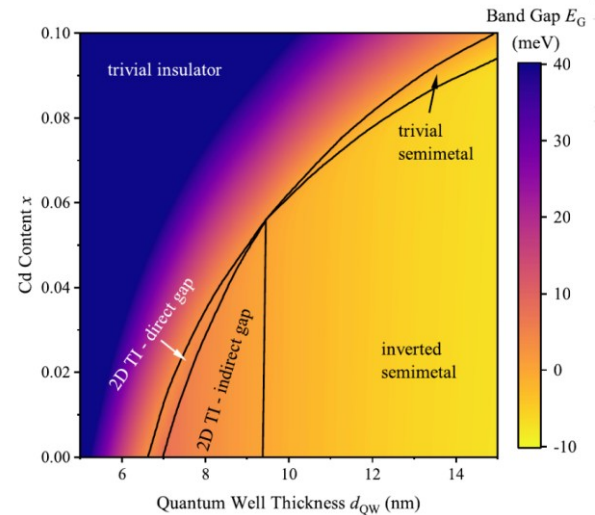
## Abstract

We present a systematic experimental study of the topological phase transition in a series of  $\sim 10$  nm thick  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$  quantum wells by tuning the Cd content  $x$ . We provide detailed structural and magneto-optical spectroscopic characterization measurements and establish a comprehensive picture of the alloy structural and energetic properties. Using these as input, we employ  $k\cdot p$  modeling to establish the topological phase diagram of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$  in dependence on the Cd content and quantum well thickness for thin films which are pseudomorphically strained to the lattice constant of pure CdTe.

## References

- [1] L. Bovkun et al., Phys. Rev. Mater., 9 (2025) 054602

## Figures



**Figure 1:** Calculated phase diagram of the topological phases of  $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$  quantum wells pseudomorphically strained to CdTe in dependence on cadmium content and quantum well thickness. Adapted from [1].