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Supplemental information

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Supporting Information

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Supplemental Figures (Figure S1 - S5)

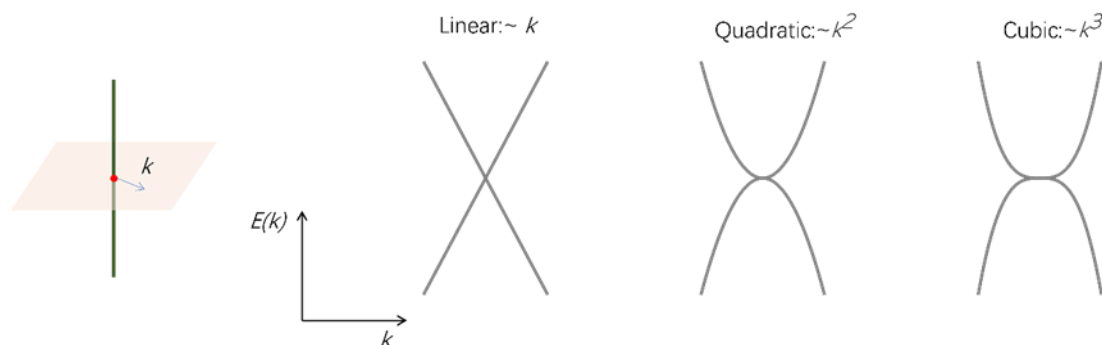


Figure S1. Schematic diagram of conventional and high-order nodal lines (Related to Figure 1). The linear, quadratic and cubic crossing points in momentum space.

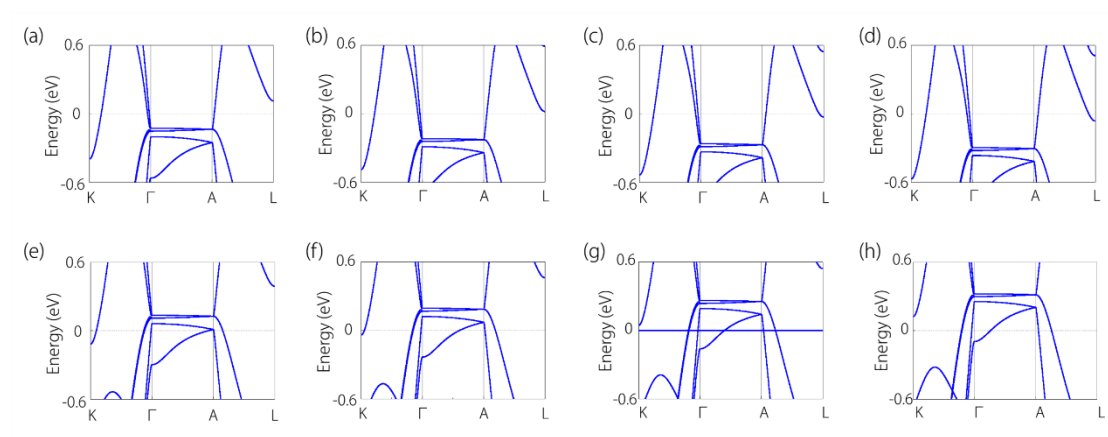


Figure S2. Electronic band structures of doped electrons and holes (Related to Figure 4).

(a-d) Electronic band structure for Na₂CdSn with doping electrons, where the number of electrons is 0.05, 0.1, 0.15, 0.2.

(e-h) Electronic band structure for Na₂CdSn with doping holes, where the number of holes is 0.05, 0.1, 0.15, and 0.2.

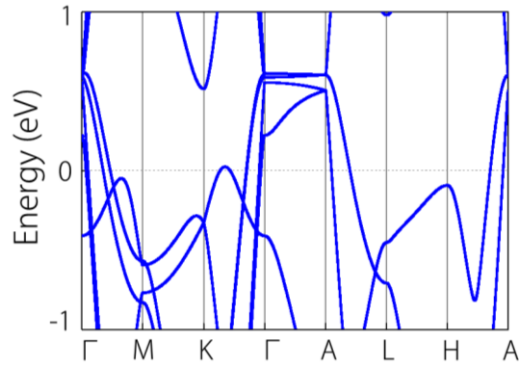


Figure S3. Electronic band structure for Na₂CdSn with doping 0.5-holes (Related to Figure 4).

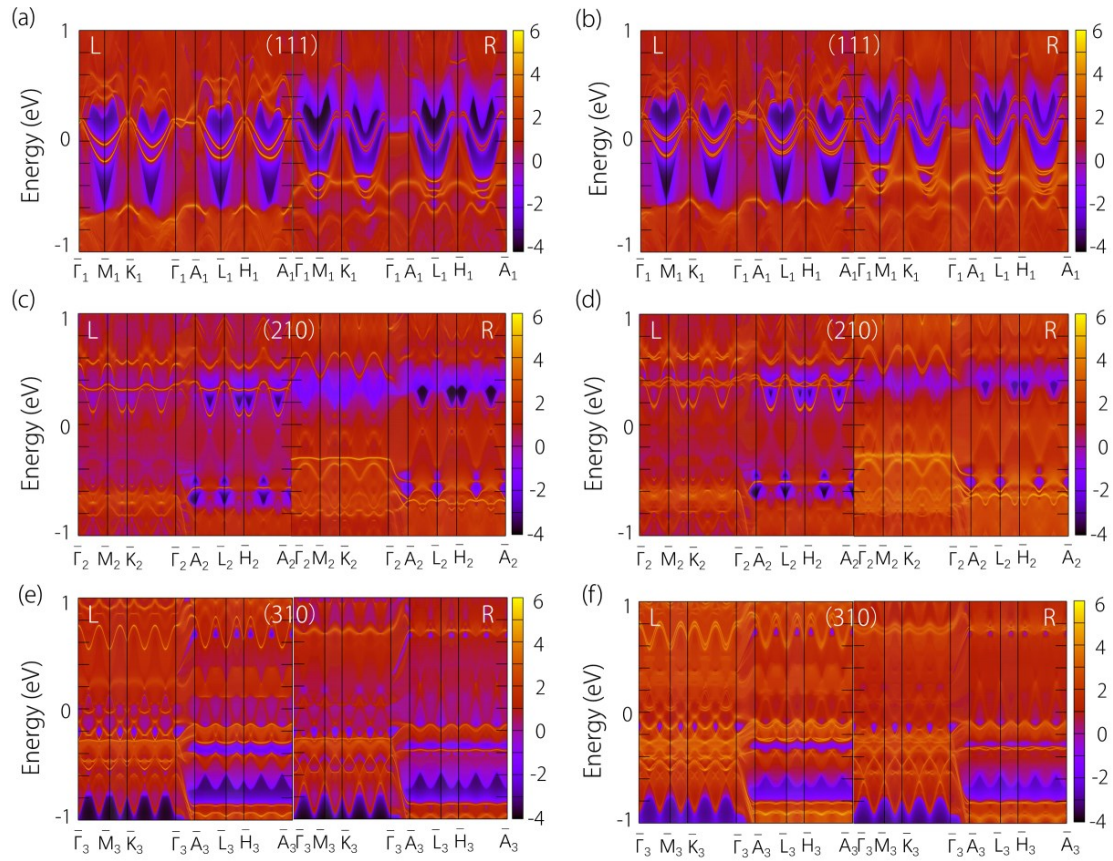


Figure S4. Surface states of Na₂CdSn on different surfaces (Related to Figure 3).

(a, b) Projected surface spectra on the (111) surface with/without SOC.

(c, d) Projected surface spectra on the (210) surface with/without SOC.

(e, f) Projected surface spectra on the (310) surface with/without SOC.

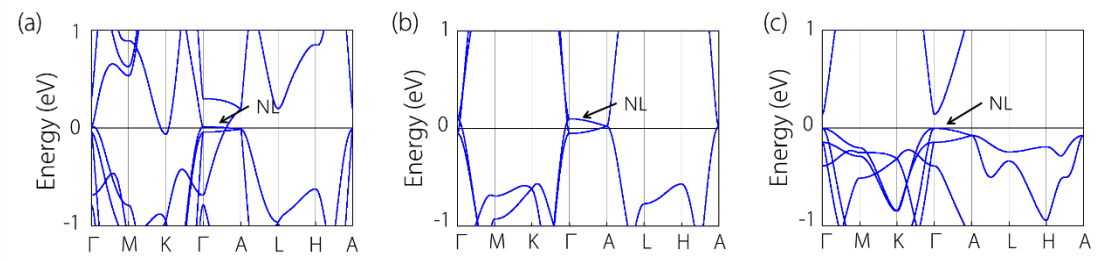


Figure S5. Electronic band structures of other three QNL materials (Related to Figure 6).

(a-c) Electronic band structures of Na_2MgPb , KHgAs , and K_2NaAs , respectively.