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Linear dispersions in two-dimensional materials: a crystal with symmetry pbma1' as an example

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Symmetry determines forms of band structures in the vicinity of special points in the reciprocal space of one-, two- and three-dimensional materials. After short introduction to the complete classification of linear dispersions in 2D materials,[1] we will focus on a particular example. A tight binding model on a crystal with four sites per primitive cell that belongs to grey layer single group $pbma$ (45.2.315 or $pbma1'$ in the magnetic layer groups notation of Ref. [2]) is calculated. Fortune teller states are obtained in the Brillouin zone corners, as predicted[3,1] by group theory for non-magnetic materials with negligible spin-orbit coupling. We will discuss possible realizations of this model in realistic and hypothetical materials.

References

1. N. Lazić, V. Damljanović and M. Damnjanović, *arXiv*: 2108.11733 (2021).
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3. V. Damljanović, I. Popov and R. Gajić, Nanoscale **9**, 19337 (2017).

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