



量子物理学・ナノサイエンス第 77 回特別セミナー

Topological Flat Bands in 2D lattices and 3D materials

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日程 : **9 月 27 日 (月) 14:00 -**

場所 : **Zoom***

概要

Electrons whose energy dispersion is bound within a narrow window, i.e. "flat bands", are conjectured to exhibit a wide-range of interesting physics phenomena. Take the twisted bilayer graphene as a representative example, the flatness of the electronic bands plays a crucial role in the physics of, for example in the appearance of both the correlated insulator states and of the strong-coupling superconductivity. In this talk, I report on our recent progress in the topological flat bands. I will highlight two main results: (1) Topological flat bands with fragile band topology in 2D Line- and Split graph lattice, (2) Topological flat bands with strong band topology in 2D Line- and Split graph lattice of bipartite lattice, and (3) Catalogue of Flat Band of 3D materials.

References:

- (1) D. S. Ma, Y. Xu, C. S. Chiu, N. Regnault, A. A. Houck, Z. Song, and B. A. Bernevig, *Physical Review Letters* **125**, 266403 (2020).
- (2) C. S. Chiu, D. S. Ma, Z. D. Song, B. A. Bernevig, and A. A. Houck, *Physical Review Research* **2**, 043414 (2020).
- (3) N. Regnault, Y. Xu, M. R. Li, D. S. Ma, M. Jovanovic, A. Yazdani, S. S. P. Parkin, C. Felser, L. M. Schoop, N. Phuan Ong, R. J. Cava, L. Elcoro, Z. D. Song, B. A. Bernevig, arXiv:2106.05287

*本 ZOOM セミナーに参加されます場合には、事前に下記より登録を済ませてください。

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