

# Novel states from interlayer interactions in layered two-dimensional crystals

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Recent advances in fabricating stacked two-dimensional crystals realize interesting electronic and magnetic structures in low dimensions. In this talk, first, I will discuss interesting interplay between inter-layer interactions, symmetry, and many-body correlation in magnetic layered materials [1] and introduce a new computational scheme to understand layered magnetism [1]. Second, I will also introduce a new framework [2] to understand the recent spectroscopic measurement of graphene quasicrystal [3]. With this, it is shown that new Hamiltonian formalism for graphene quasicrystal can be constructed and that the spatially localized 12-fold resonant states exist together with fractal scaling in their wavefunction [2].

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## References

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- [1]. S. Lee and Y.-W. Son, *in preparation* (2019).
- [2] P. Moon, M. Koshino, Y.-W. Son, *submitted* [arXiv:1901.04701] (2019).
- [3] S. J. Ahn, P. Moon, *et al.*, *Science* 361, 782 (2018).