

One-dimensional flat bands in twisted bilayer germanium selenide

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Experimental advances in the fabrication and characterization of few-layer materials stacked at a relative twist of small angle have recently shown the emergence of flat energy bands. As a consequence electron interactions become relevant, providing inroads into the physics of strongly correlated two-dimensional systems. Here, we demonstrate by combining large scale ab initio simulations with numerically exact strong correlation approaches that an effective one-dimensional system emerges upon stacking two twisted sheets of GeSe, in marked contrast to all moiré systems studied so far. This not only allows to study the necessarily collective nature of excitations in one dimension, but can also serve as a promising platform to scrutinize the crossover from two to one dimension in a controlled setup by varying the twist angle, which provides an intriguing benchmark with respect to theory. We thus establish twisted bilayer GeSe as an intriguing inroad into the strongly correlated physics of lowdimensional systems.

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