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Observations of superlattice Dirac points in one-dimensionally-rippled graphene on hexagonal BN using scanning tunneling spectroscopy
WON-JUN JANG, MIN WOOK LEE, SOON-HYEONG LEE, Department of Physics, Korea University, MIN WANG, SUNG KYU JANG, MINWOO KIM, SUNGJOO LEE, SANG-WOO KIM, YOUNG JAE SONG, SKKU Advanced Institute of Nanotechnology (SAINT), Sungkyunkwan University (SKKU), SE-JONG KAHNG, Department of Physics, Korea University — It has been predicted that superlattice potentials in graphene would induce new Dirac points due to lattice-induced chirality of charge carriers. In this talk, we present our experimental observations of new Dirac points in one-dimensionally-rippled graphene on hexagonal BN using scanning tunneling microscopy and spectroscopy. The ripples, formed by thermal cycles, showed two new Dirac points of which energy levels were proportional to 1/L, where L was the period of a ripple, in agreement with theoretical predictions. Our study shows that one-dimensional periodic potential is an accessible component for controlling electronic properties of graphene.

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