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Quantized Strain Channels in Bilayer Graphene ADAM TSEN, ROBERT HOVDEN, JONATHAN ALDEN, PINSHANE HUANG, LOLA BROWN, DAVID MULLER, PAUL MCEUEN, JIWOONG PARK, Cornell University — For bilayer graphene, Bernal stacking presents the lowest energy configuration. However, when the two layers are free to translate, there are two mirrored Bernal stacking orders with degenerate energies [1]. In large-area bilayer systems grown by chemical vapor deposition domains of both stacking configurations have been observed [2], although the precise structure of their boundaries was not understood. Here, we image such structures with atomic resolution using scanning transmission electron microscopy (STEM). We find that domain boundaries are formed by continuous strain of one layer with respect to the other, while the direction and magnitude of their displacements are quantized by the energy landscape. Finally, we extend their characterization over many microns with standard dark-field TEM imaging and discover that the strain regions form long channels that can perhaps be exploited for their electronic properties in the future. 1. Lebedeva et al., J. Chem. Phys. 134, 104505 (2011) 2. Brown et al., Nano Lett. 12, 1609 (2012)

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