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**Band structure asymmetry of bilayer graphene revealed by infrared spectroscopy** ZHIQIANG LI, University of California, San Diego, ERIK HENRIKSEN, Columbia University, ZHIGANG JIANG, Columbia University/NHMFL, ZHAO HAO, Lawrence Berkeley National Laboratory, MATT ZHANG, MICHAEL FOGLER, University of California, San Diego, MICHAEL MARTIN, Lawrence Berkeley National Laboratory, PHILIP KIM, Columbia University, HORST STORMER, Columbia University/Bell Labs, DIMITRI BASOV, University of California, San Diego — We report on infrared spectroscopy of bilayer graphene integrated in gated structures. The dominant feature of the optical conductivity is a resonance peak due to interband transitions between the two conduction bands or two valence bands. Both the frequency and the voltage dependence of the peak show a significant asymmetry upon electrostatic doping of electrons and holes. We show that this finding arises from a marked asymmetry between the valence and conduction bands, which is mainly due to the inequivalence of the two sublattices within the graphene layer and the interlayer coupling. From the conductivity data, the energy difference of the two sublattices and the interlayer coupling energy are directly determined.

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