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Encapsulated Superconducting Graphene Nanodevices for Transport and Spectroscopic Studies JOEL I-JAN WANG, Massachusetts Institute of Technology/Harvard School of Engineering and Applied Sciences, PATRICK BACK, Swiss Federal Institute of Technology in Zurich (ETHZ), YU-AN CHEN, Massachusetts Institute of Technology, KENJI WATANABE, TAKASHI TANIGUCHI, National Institute for Materials Science (NIMS), Japan, PABLO JARILLO-HERRERO, Massachusetts Institute of Technology — Through proximity effect, graphene provides an ideal platform to study mesoscopic superconductivity and other quantum phenomena when it is in contact with superconductors. The advancement in the fabrication techniques of 2-D Van der Waals heterostructures has brought the superconducting graphene nanodevice into ballistic regime and made it suitable for a variety of studies. We show superconducting graphene nanodevices encapsulated in hexagonal boron nitride (hBN) thin films. The pristine graphene can be proximitized by superconducting leads, manipulated by local gating and probed by tunneling leads in order to explore various kinds of physics.

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