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SPELEEM Studies on the Electronic Structure of MoS_2/Graphene Heterostructure WENCAN JIN, PO-CHUN YEH, NADER ZAKI, DANIEL CHENET, GHIDEWON AREFE, YUFENG HAO, Columbia University, ALESSANDRO SALA, TEVFIK MENTES, ANDREA LOCATELLI, Elettra Sincrotrone Trieste, JAMES HONE, RICHARD OSGOOD, Columbia University, COLUMBIA UNIVERSITY COLLABORATION, ELETTRA SINCROTRONE TRIESTE COLLABORATION — Two-dimensional layered materials have been realized through the use of van der Waals heterostructures composed of weakly interacting layers. Among them, MoS2/graphene heterostructures can combine the advantages of high carrier mobility in graphene with the direct band gap of MoS2, which leads to potential applications in nanoelectronic devices with various functionalities. In this work, we study the influence of interlayer twist angle on the electronic structure of a MoS2/graphene heterostructure using Spectroscopic Photoemission and Low Energy Electron Microscopy (SPELEEM) system. MoS2/graphene heterostructures are prepared by transferring chemical-vapor-deposition (CVD)-grown monolayer MoS2 on top of CVD-grown graphene. Twist angles are characterized using the micro-LEED and the electronic structures are directly measured using micro-ARPES.

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