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Coherent quantum-well electronic structure in bimetallic Pb/Ag films prepared on Si(111). MATTHEW BRINKLEY, Univ of Illinois at Urbana-Champaign, YANG LIU, NATHAN SPEER, THOMAS MILLER, TAI-CHANG CHIANG, UIUC — Angle-resolved photoemission is employed to investigate the electronic structure of Pb films of various thicknesses grown on atomically uniform Ag(111) films. The Ag films, which were deposited on Si(111) substrates, host fully confined electrons at energies within the absolute gap of Si and partially confined electrons outside. The question is: What is the electronic structure of the Pb films prepared over the Ag films? Our results reveal that the quantized electronic structure of the Ag films can be detected for Pb overlayers with thicknesses much larger than the photoemission escape depth. Comprehensive simulations have been performed and are in agreement with the experimental results. This study reveals a strong coherent coupling of the Ag and Pb electronic structures despite the incommensurate Ag/Pb interface.

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