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Coherent Electronic Fringe Structure in Incommensurate Silver-Silicon Quantum Wells NATHAN SPEER, SHU TANG, TOM MILLER, TAI CHIANG, University of Illinois at Urbana-Champaign — Atomically uniform Ag films grown on highly doped n-type Si(111) substrates show fine-structured electronic fringes near the Si valence band edge as observed by angle-resolved photoemission. No such fringes are observed for Ag films grown on lightly doped n-type substrates or p-type substrates, although all cases exhibited the usual quantum well states corresponding to electron confinement in the film. The fringes correspond to electronic states extending over the Ag film as a quantum well and reaching into the Si substrate as a quantum slope, with the two parts coherently coupled through an incommensurate interface structure.

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