

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Electronic Structure and Dynamics of Quantum-Well States in thin Yb-Metal Films DANIEL WEGNER, ANDREAS BAUER, GÜNTER KAINDL, Institut für Experimentalphysik, Freie Universität Berlin, Arnimallee 14, 14195 Berlin, Germany — By low-temperature scanning tunneling spectroscopy, we have studied quantum-well states above the Fermi energy in thin Yb(111)- metal films deposited on a W(110) single crystal. These states are laterally highly localized and give rise to sharp peaks in the tunneling spectra. Due to the high lateral resolution of STS, the quantum-well states and their film-thickness dependence can be observed on rather rough films with variations of the local thickness over a range of several monolayers. A quantitative analysis of the spectra yields the bulk-band dispersion in $\Gamma - L$ direction as well as quasi-particle lifetimes. The quadratic energy dependence of the lifetimes is in quantitative agreement with Fermi-liquid theory. cond-mat/0411580.

Günter Kaindl
Institut für Experimentalphysik, Freie Universität Berlin
Arnimallee 14, 14195 Berlin, Germany

Date submitted: 01 Dec 2004

Electronic form version 1.4