

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Anisotropic Rashba splitting of Au(110) surface states¹ BALAZS UJFALUSSY, ESZTER SIMON, Research Institute for Solid State Physics and Optics, ATTILA SZILVA, GERGELY ZARAND, Department of Theoretical Physics, Budapest University of Technology, BENCE LAZAROVITS, Research Institute for Solid State Physics and Optics, LASZLO SZUNYOGH, Department of Theoretical Physics, Budapest University of Technology — We investigate the surface Rashba effect subject to reduced in-plane symmetry. Based on a $\mathbf{K}\cdot\mathbf{p}$ perturbation theory, we give a detailed microscopic description of the Anisotropic Rashba Splitting (ARS). Furthermore, we show that this ARS can not be explained within the standard theoretical picture of the Rashba effect assuming a purely normal-to-surface variation of the crystal potential. The new microscopic expression for the Rashba Hamiltonian is explicitly supported by fully relativistic first principles calculations for the case of unreconstructed Au(110) surface.

¹Research supported by OTKA grants T068312, F68726, NF061726

Balazs Ujfalussy
Research Institute for Solid State Physics and Optics

Date submitted: 20 Nov 2009

Electronic form version 1.4