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The Surface Fermi Surface of Ir{100}

The experimental surface band structure for the two phases of Ir{100} was measured at the Fermi level using angle resolved photoemission spectroscopy. Electron hole pockets are observed on the (1x1) phase centered around the $\overline{X}$ point, whereas a flat plate-like structure approximately 0.1 eV below the Fermi level is observed on the (hex) phase. Both resonance structures may be related to a high density of states region within the bulk. The disappearance of the band centered around $\overline{X}$ on the unreconstructed phase has previously been reported for the surface Fermi surface of Pt{100} [1] suggesting similar behaviour. The Fermi surface bands in the late transition metal series of Ir, Pt, and Au may be involved in the mechanism of the very well known surface (hex)-phase reconstruction.

[1] A. P. J. Stampfl, R. Martin, P. Gardner, and A. M. Bradshaw, PRB 51(1995)10197

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