



Physikalisches Institut  Institut für Festkörperteorie

Integriertes Seminar

Aktuelle Probleme dimensionsreduzierter Festkörper

Ort: Seminarraum 718 (Wilhelm-Klemm-Straße 10)

Zeit: **Mittwoch, 27.06.2018, 10:15 Uhr**

Spin-Orbit Interaction in Low-Dimensional Electron Gases of Anisotropic Atomic Layers of Pb on Si Surfaces

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Atomic monolayers (ML) of Pb/Si(111) have recently been found to be superconducting below $T_c \approx 1.8$ K, but the mechanism behind the evolution of these 1d (or 2d) states is yet not understood. In the range from $6/5$ ML to $4/3$ ML, supercells consisting of linear combinations of $(\sqrt{7} \times \sqrt{3})$ and $(\sqrt{3} \times \sqrt{3})$ unit cells are formed (so-called Devil's staircase regime). This allows us to tune the spin-orbit interaction (SOI), the electronic and atomic structure via adsorption of minute amounts of Pb. In this talk I present (spin resolved)-ARPES measurements at low T ($\gg T_c$) to evaluate the influence of SOI on the Pb surface states. The SOI gives rise to manifold types of spin-splittings of the surface bands as can be derived from the spin-texture around the surface high symmetry points. Moreover, breaking the high symmetry of the perfect $(\sqrt{3} \times \sqrt{3})$ surface reconstruction feeds back onto the measured spin-polarization.

Einladender: Markus Donath