

O 54: Invited Talk Menzel

Time: Thursday 14:00–14:45

Location: H36

Invited Talk

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Interplay between dimensionality and “exotic” properties: Model systems on surfaces

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Due to the enhanced many-body interactions in low-dimensional metals, a small change of external parameters may introduce very interesting transitions between various metallic, isolating, magnetic and superconducting phases. Despite intense investigations of various (mostly bulk) model systems, a complete understanding of these phase transitions is still lacking.

The realisation of low-dimensional model systems on a surface rather

than in a bulk material has the advantage that the highly advanced surface science tools allow to prepare and change the model system in situ. Additionally, both, electronic structure and geometry can be investigated on a global (ARUPS, LEED) and on a local (STM) level.

While most efforts concentrate on low-dimensional metal structures supported by semiconductor or insulator substrates, it is possible to create low dimensional electronic states also on metal surfaces. Utilizing Pt(110) as a template, it is shown here that strongly anisotropic transition metal surfaces may have peculiar band topologies which support quasi-1 dimensional electronic states with high DOS at the Fermi energy. The surface shows experimental fingerprints typical for low-dimensional metals and other correlated materials and thus indicates a promising new class of model systems.