

Einladung
zum
Physikalischen Kolloquium
Montag, 24.04.2017
16:15 Uhr in N24/H13



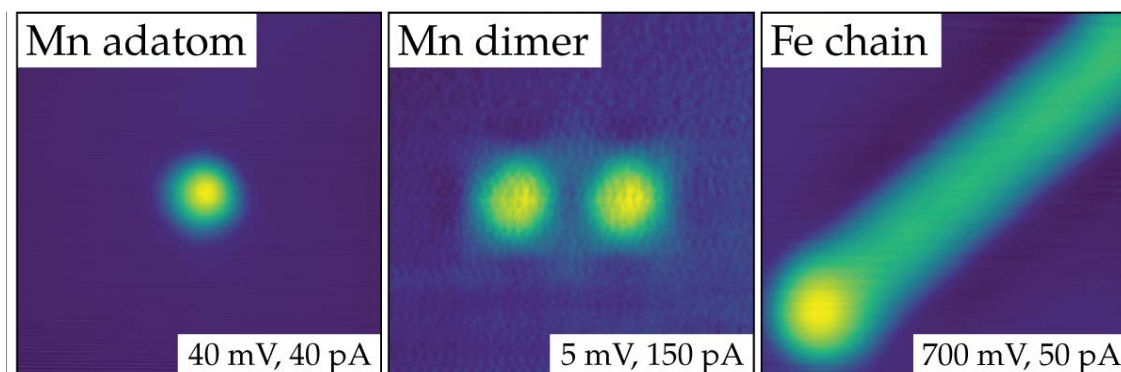
Professor Dr. Katharina J. Franke

Fachbereich Physik
Freie Universität Berlin

From single magnetic adatoms on superconductors to coupled spin chains

Magnetic adsorbates on conventional s-wave superconductors lead to exchange interactions that can induce bound states inside the superconducting energy gap. These states are known as Yu-Shiba-Rusinov (YSR) states and can be resolved by scanning tunneling spectroscopy as a pair of resonances at positive and negative bias voltages in the superconducting gap.

Here, we employ tunneling spectroscopy at 1.1 K to investigate magnetic atoms and chains on superconducting Pb surfaces. We show that individual Manganese (Mn) atoms give rise to a distinct number of YSR-states, depending on the crystal field imposed by the adsorption site. The spatial extension of these states directly reflects their origin as the singly occupied d-states. When the atoms are brought into sufficiently close distance, the YSR states hybridize and give rise to states with bonding and anti-bonding character. Within one-dimensional chains, the hybridized YSR states lead to spin-polarized bands. Whereas Fe chains show signatures of Majorana zero modes, Co chains do not provide evidence for these. We explain the difference by the different occupancy of the d-bands.



Ab 16.00 Uhr Kaffee, Tee und Kekse vor dem Hörsaal H13

Organisation: Prof. Dr. F. Jelezko, Tel. 23750

Host: Prof. Dr. J. Ankerhold, Tel. 22831, off.: 22830