Positronenspektroskopie

## Fermi surfaces in $TiBe_2$ through positron annihilation

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We present positron annihilation measurements performed on a single crystal of the nearly ferromagnetic C15 compound $TiBe_2$. The two dimensional angular correlation distribution has been measured in the (211) plane. The data are analysed in the repeated zone scheme and compared with theoretical results obtained from a LMTO band structure calculation, taking account of the positron wave function. Using a back-projection technique, an attempt to reconstruct the Fermi surface from only one projection is done and compared with the theoretical surface.

## Study of electron-positron correlation in 3d transition metals

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Two-dimensional angular correlation of positron annihilation radiation measurements are analysed to investigate the nature of the many-body correlation effects. This is done by comparing experimental data with calculations performed in the independent particle approximation (IPA) using the linear muffin-tin orbital method. A phenomenological model is proposed to overcome the discrepencies betwen experiment and IPA calculations. According to this model, correlation effects are drastically different for d- and s- band electrons. For the d-band electrons lying near the Fermi energy, correlation tend to decrease the electron and positron wavefunction overlap. This model is applied to V, Cr and Ni.

## Fermi surfaces in $Nb_3Sn$ through positron annihilation

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In order to understand the high superconducting transition temperature in the A15 structure compounds, we have performed two-dimensional positron annihilation measurements on a $Nb_3Sn$ single crystal in the three symmetry directions (100), (110) and (210). The data are analysed in the repeated zone scheme and compared with theoretical results obtained from a LMTO band structure calculation. The theoretical Fermi surface is also compared with an experimental surface obtained by means of a back-projection technique.