Electronic structure of rare-earth compounds $TmGa_3$, $ErGa_3$, and $CeIn_3$ studied by positrons[1]

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The isostructural systems $TmGa_3$, $ErGa_3$, and $CeIn_3$ constitute an interesting subject for their magnetic properties and, in the case of $CeIn_3$, for the fascinating interplay of antiferromagnetism, heavy-fermion behaviour and superconductivity under application of pressure[3]. The electronic structure of these compounds has recently been investigated by measurements of the two-dimensional angular correlations of positron annihilation radiation (2D ACAR), providing line projections of the electron-positron momentum density $\rho(\mathbf{p})$[4]. Whereas for all systems the *f*-electrons are mostly localized in the paramagnetic phase, the exact shape of their Fermi surfaces (FS) is slightly different. Indeed, $TmGa_3$ and $ErGa_3$ show a FS *nesting*, consistent with the observed magnetic structure, which does not occur in $CeIn_3$ having a different magnetic structure. Since the FS geometry is decisive to draw these conclusions, we present how various tomographic methods can influence 3D momentum densities and FS of the compounds[5].

9.7 cm

13.4 cm

Subject category :

4. Rare Earths and Actinides, Alloys and Compounds

Presentation mode :

poster

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[1]Supported by Polish State Committee for Scientific Research (Grant No. 2 P03B 012 25).

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