

## Microsymposium

**MS02.O05**

*RKKY interactions and magnetic structure of rare-earth quasicrystals*

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We study the structure of the RKKY interactions and the corresponding low-temperature behaviour of magnetic moments for quasiperiodic tilings. The alignment of magnetic moments in rare-earth quasicrystals remains a fundamental open problem despite the continuous effort since the discovery of this material class. We compute the RKKY interactions between the localized magnetic moments by means of a continued fraction expansion of the Green's function of the conduction electrons. Thus, our approach takes the structure of the critical electronic wave functions into account. The results show the emergence of strongly coupled spin clusters while the inter-cluster coupling is significantly weaker. Monte Carlo simulations reveal with decreasing temperature first the freezing of spins within the clusters followed by the freezing of the clusters. Thus, the low-temperature phase behaves has similarities to a cluster spin glass which is in good agreement with previous experimental findings.

**Keywords:** quasicrystals, RKKY interactions, cluster spin glass