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Hund's coupling and spin-orbit interactions in three-orbital systems

I will present dynamical mean-field theory results on ruthenates and show how the anomalous properties of their metallic state occur as a consequence of Hund's coupling and the peculiarities of the band-structure. Good agreement with several experimental results in several compounds will be demonstrated. Then the question of the influence of the spin-orbit interactions (not included in results above) will be raised. This question will be approached within a numerical renormalization group study of a three-orbital Kanamori impurity problem with spin-orbit coupling. The crossover between different phases as a function of spin-orbit coupling will be discussed.