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Spectral and magnetic properties of the iron-based superconductors: The role of electronic correlation ALESSANDRO TOSCHI, Vienna University of Technology, P. HANSMANN, Centre de Physique Theorique, Ecole Polytechnique, R. ARITA, Department of Applied Physics, University of Tokyo, S. SAKAI, Centre de Physique Theorique, Ecole Polytechnique, G. SANGIOVANNI, K. HELD, Vienna University of Technology — Electronic correlation plays a subtle role in Fe-based superconductors. In fact, due to the presence of several moderately correlated bands close to the Fermi level, one observes the formation of localized magnetic moments driven by the Hund's exchange interactions, which takes place, however, in a mainly metallic background ("Hund's metal" [1]). This physical scenario provides the key to understand [2,3] the discrepancies observed between experimental estimates of the magnetic moments in the magnetically ordered phase and those obtained via standard LSDA calculations. The magnitude of the discrepancy observed in different compounds would be hence related to the efficacy of the metallic screening, which is decreasing when going from the 1111 (e.g., LaFeAsO) to the 122 class, and eventually to the 11 materials (like FeTe). Also important to be considered for the interpretation of the ARPES experiments and of the symmetry of the superconducting pairing within the Hund's exchange scenario is the interplay between the electronic correlations and the details of the bandstructure of the specific compound considered.

[1] K. Haule and G. Kotliar, NJP **11** 025021 (2009). [2] P. Hansmann, et al., PRL **104**, 197002 (2010). [3] A. Toschi, et al. in preparation

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