

Abstract Submitted
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Exchange Splitting above the Curie Temperature in EuO TIMM GERBER, MARKUS ESCHBACH, TRISTAN HEIDER, EWA MLYNCZAK, PATRICK LOEMKER, PIKA GOSPODARIC, MATHIAS GEHLMANN, MORITZ PLOETZING, Research Center Juelich, OKAN KOEKSAI, ROSSITZA PENTCHEVA, University Duisburg-Essen, LUKASZ PLUCINSKI, CLAUS M. SCHNEIDER, MARTINA MUELLER, Research Center Juelich, University Duisburg-Essen — The ferromagnetic semiconductor europium monoxide (EuO) is an attractive material for fundamental research in the field of spintronics [1,2]. The magnetism in EuO is usually explained in the Heisenberg model of localized spins and their exchange interactions. While the material is known since decades, the actual exchange mechanisms are still debated [3]. Here, the electronic structure of EuO is investigated by means of spin- and angle-resolved photoemission spectroscopy (spinARPES). Our spin-resolved data reveals a complex temperature dependence of the occupied density of states which could not be accessed by previous spin-integrated measurements [4]. We find that the exchange splitting of the O 2p band is present also above the Curie temperature. Our findings are explained by the presence of co-called spin-blocks (i.e. large clusters of spontaneously magnetized material) that are present at the Curie temperature, and even above. [1] M. Mueller et. al., J. Appl. Phys. 105, 07C917 (2009) [2] A. Schmehl et. al., Nat. Mater. 6, 882 (2007) [3] X. Wan et. al., Phys. Rev. B, 83, 205201 (2011) [4] H. Miyazaki et. al., Phys. Rev. Lett. 102, 227203 (2009)

Timm Gerber
Research Center Juelich

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