

Abstract Submitted
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Magnetic impurities in the two-band model for Fe-based superconductors¹ M.M. KORSHUNOV, L.V. Kirensky Institute of Physics, Akademgorodok, Krasnoyarsk 660036, Russia, O.V. DOLGOV, Max-Planck-Institut FKF, D-70569 Stuttgart, Germany, A.A. GOLUBOV, Faculty of Science and Technology and MESA+ Institute of Nanotechnology, University of Twente, The Netherlands, D.V. EFREMOV, Leibniz-Institut fuer Festkoerper- und Werkstoffforschung, D-01069 Dresden, Germany — Superconductors with different gap symmetries behave differently being subject to the disorder. It is especially important to determine this exact behavior in the Fe-based materials where both the order parameter symmetry and the mechanism of superconductivity are unknown. Here we analyze how the magnetic disorder affects the low-energy properties of the two-band s_{\pm} and s_{++} models. In a general case, T_c is suppressed approximately following the Abrikosov-Gor'kov trend. There are, however, few exceptional cases with the saturation of T_c for the finite amount of impurities: 1) s_{\pm} superconductor with the purely interband impurity scattering potential or with the unitary impurities, 2) s_{++} state with the purely interband scattering. We show that the latter unusual behavior is due to the $s_{++} \rightarrow s_{\pm}$ transition. Similar to the case of non-magnetic impurities in a two-band superconductor, the transition occurs depending on the sign of the average coupling constant $\langle\lambda\rangle$.

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