

Spin-orbit coupling in Fe-based superconductors

M.M. Korshunov^{1, 2}, Yu.N. Togushova², I. Eremin^{3, 4}, and P.J. Hirschfeld⁵

¹ *L.V. Kirensky Institute of Physics, Akademgorodok, 660036 Krasnoyarsk, Russia*

² *Siberian Federal University, Svobodny Prosp. 79, 660041 Krasnoyarsk, Russia*

³ *Institut für Theoretische Physik III, Ruhr-Universität Bochum, D-44801 Bochum, Germany*

⁴ *Kazan Federal University, 42008 Kazan, Russia*

⁵ *Department of Physics, University of Florida, Gainesville, Florida 32611, USA*

Determination of the gap symmetry is an important step towards uncovering the mechanism of superconductivity in Fe-based materials. One of the key experiments in support of the s_{\pm} spin-fluctuation-mediated gap was the observation of the spin-resonance peak in many pnictides and chalcogenides. Recently, in inelastic polarized neutron scattering measurements, it was found that the peaks in the transverse and longitudinal components of the spin susceptibility exhibit rather different behavior. I will present arguments that this disparity arises from the spin-orbit coupling. It also leads to a relative shift of the two component's resonance frequency with lower one exhibiting larger enhancement.