

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Statistics of subgap states in superconductors with sign-changing order parameter¹ ALEXEI KOSHELEV, ANREAS GLATZ, Materials Science Division, Argonne National Laboratory — There is a strong theoretical reasoning in favor of the s_{\pm} superconducting state in new iron-based superconductors. The order parameter in such a state has different signs in the electron and hole Fermi pockets. In this situation scattering between different pockets by impurities has pair-breaking effect and introduces states inside the gap which strongly influence low-temperature behavior of superconducting parameters. We solve numerically the two-band Bogolyubov equations for the s_{\pm} superconductor and explore behavior of density of states and localization properties at different scattering parameters and concentration of impurities. We found that the commonly used self-consistent T-matrix approximation is incomplete and not very accurate in describing subgap states.

¹Work supported by UChicago Argonne, LLC, under contract No. DE-AC02-06CH11357

Alexei Koshelev
Materials Science Division, Argonne National Laboratory

Date submitted: 20 Nov 2009

Electronic form version 1.4