Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Proximity fingerprint of $s_\pm$ superconductivity[1] ALEXEI KOSHELEV, VALENTIN STANEV, Materials Science Division, Argonne National Laboratory — We suggest a straightforward and unambiguous test to identify possible opposite signs of superconducting order parameter in different bands proposed for iron-based superconductors ($s_\pm$-state). We consider proximity effect in a weakly coupled sandwich composed of a $s_\pm$-superconductor and thin layer of s-wave superconductor. In such system the s-wave order parameter is coupled differently with different $s_\pm$-gaps and it typically aligns with one of these gaps. This forces the other $s_\pm$-gap to be anti-aligned with the s-wave gap. In such situation the aligned band induces a peak in the s-wave density of states (DoS), while the anti-aligned band induces a dip. Observation of such contact-induced negative feature in the s-wave DoS would provide a definite proof for $s_\pm$-superconductivity.

[1]This work was done within the "Center for Emergent Superconductivity," an EFRC funded by the U.S. DOE, Office of Science, Office of BES, Award # DE-AC0298CH1088.

Alexei Koshelev
Argonne National Laboratory

Date submitted: 15 Nov 2011 Electronic form version 1.4