## Abstract Submitted for the MAR09 Meeting of The American Physical Society

Competing magnetism and superconductivity in two-band metals ANTON VORONTSOV, MAXIM VAVILOV, ANDREY CHUBUKOV, University of Wisconsin - Madison — Recently discovered FeAs-based superconductors have a distinct multiple band structure - the hallmark feature of these materials. We consider a simple two-band model for these metals, with one electronic and one hole bands. Within this model, we treat on equal footing magnetic spin density wave (SDW) and superconducting (SC) orders. We find that at low doping, magnetism wins, but at higher dopings superconducting instability comes first. We discuss the type of a transition between the two states, incommensurate SDW order at finite dopings, and co-existence of SDW and SC orders at T=0 and finite temperatures. Our results reasonably well explain the phase diagram of  $\text{LaO}_{1-x}\text{F}_x\text{FeAs}$  compounds.

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