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**Global phase diagram and the spin structure in the Fe-based superconductors** KANGJUN SEO, CHEN FANG, JIANGPING HU, Purdue University, B. ANDREI BERNEVIG, Princeton University — We study the global phase diagram and calculate the spin susceptibility for different states based on a two-orbital  $J_1 - J_2$  model for Fe-based superconductors. Unique features associated with the unconventional  $s_{x^2-y^2} \sim \cos(k_x)\cos(k_y)$  wave pairing symmetry are identified.

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