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Jump in specific heat at the superconducting transition in iron pnictides[1] MAXIM G. VAVILOV, ANDREY V. CHUBUKOV, University of Wisconsin, ANTON B. VORONTSOV, Montana State University — Experiments reveal that in iron-based superconductors the jump ΔC of the specific heat at the superconducting transition is not proportional to the transition temperature T_c, as expected in the BCS theory. Rather, the ratio $\Delta C/T_c$ varies with T_c, and has a peak near optimal doping and decreases at smaller and larger dopings. We show that this behavior can be naturally explained by the interplay between superconductivity and antiferromagnetism in the underdoped regime. We demonstrate that $\Delta C/T_c$ is indeed peaked at the doping where the coexistence phase with antiferromagnetism develops, and decreases at deviations from this doping in both directions.

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