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Two-order-parameter theory of magnetism and superconductivity VICTOR GALITSKI, TUDOR STANESCU, University of Maryland — Starting with a microscopic interacting electron Hamiltonian, we derive a self-consistent two-order-parameter theory to describe a general case of competing or co-existing magnetic and superconducting instabilities. This is achieved by splitting the initial interaction in two different channels and weighting each channel with an auxiliary field with a non-linear constraint. The double Hubbard-Stratonovich transform leads to a model similar to that in gauge theories. We analyze the resulting theory and argue that generally the magnetic and superconducting fluctuations are equally important and should be treated on equal footing. We discuss the general criteria of the two transitions occurring at similar energy scales and discuss the relevance of these results to superconductivity in the heavy fermion compounds and possibly the cuprates.

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