How to measure the effective potential for disordered systems

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In contrast to standard critical phenomena, disordered systems need to be treated via the Functional Renormalization Group. The latter leads to a disorder distribution, which after a finite renormalization becomes non-analytic, thus overcoming the predictions of the seemingly exact dimensional reduction. We discuss, how the non-analytic effective potential can be measured, and we confront theory with simulation and experiment. (For an introduction, see cond-mat/0611346.)