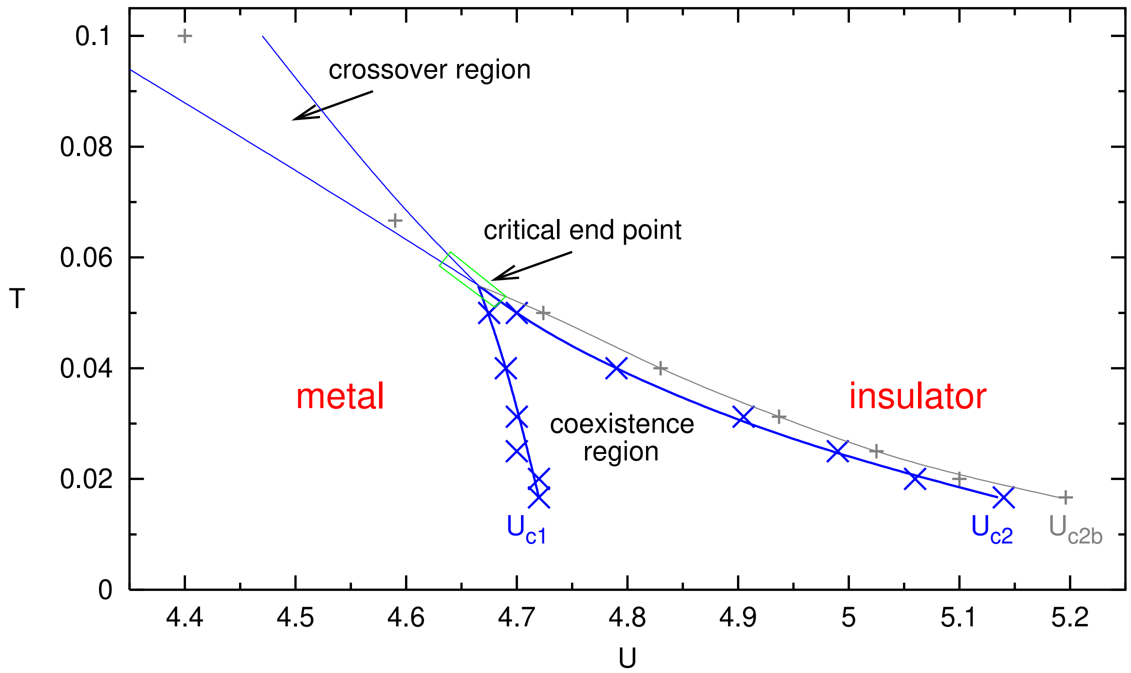


**Figure 3.31:** MIT phase diagram: critical end point at $U^* = 4.665$, $T^* = 0.055$ (approximate error bounds are indicated as green rectangle), crossover region at higher $T$, and coexistence region at lower $T$. Large tilted crosses indicate $U_{c1}$ and $U_{c2}$, the lower and upper edge of the coexistence region, respectively. Smaller upright crosses denote $U_{c2b}$, where the fits for the energies of metallic and insulating phases coincide (cf. subsection 3.5.3). Symbol widths roughly indicate the associated errors (in $U$).

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region as estimated from the QMC simulations, extrapolated to $\Delta\tau = 0.0$. These data points correspond to the end points of the fit curves for the energy estimates presented in Fig. 3.24 – Fig. 3.29 (thick part of the fit curves for the metallic phase). Small crosses in Fig. 3.31 indicate the crossing points $U_{c2b}$ of the (extrapolated) fit curves for metal and insulator. While these crossing points lie just outside the stability region of the metallic phase at low temperatures, they are within the crossover region at higher temperatures. The lines shown in Fig. 3.31 do not only guide the eye, but also represent our best estimates of the phase boundaries. In particular, their common crossing point defines the critical point, i.e., the upper tip of the coexistence region at $U^* = 4.665$ and $T^* = 0.055$. At the same time, it also forms the lower tip of the crossover region. The thin blue lines represents our definition of the crossover region: between these lines, the QMC energy estimates deviate both from the linear fit curves on the metallic side and the universal form (3.18) on the insulating side (cf. Fig. 3.22 and Fig. 3.23). The estimate of the coexistence region, denoted by thick blue lines, was obtained from interpolation of a subset of the QMC data points, using a spline slightly biased to be consistent with the extrapolation of $U_{c2b}$ (thin grey line) and with the boundaries of the crossover region. The errors in the critical temperature and in the critical interaction are highly correlated as indicated by the