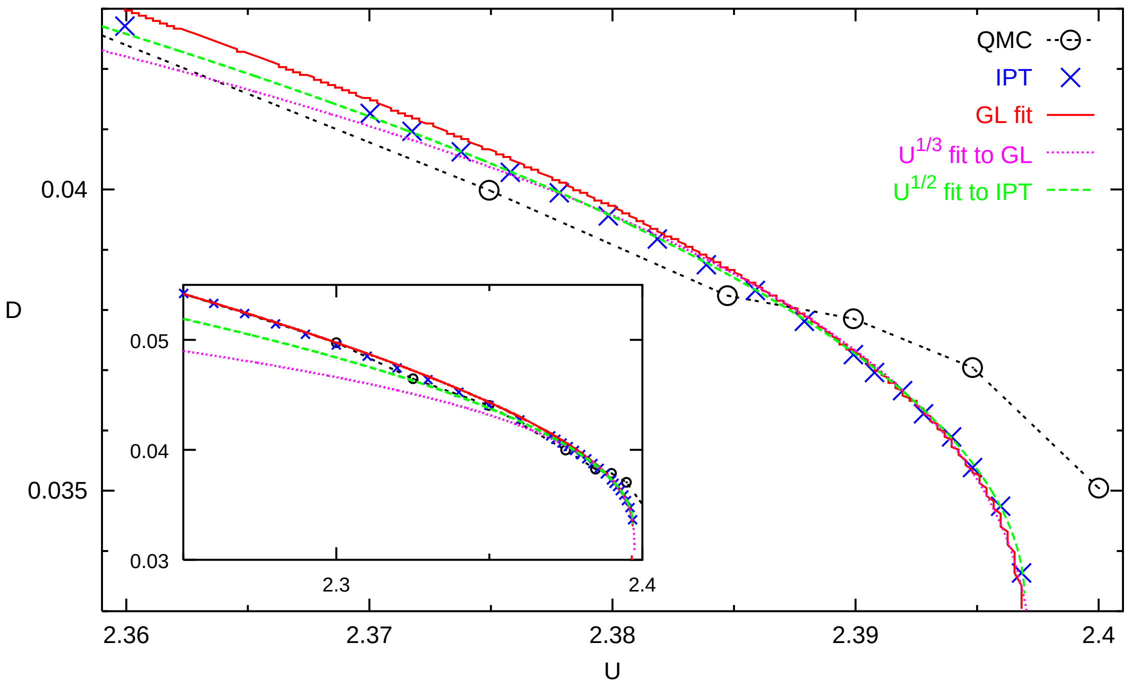

Figure 3.61: Double occupancy D versus U for $T \lesssim T^*$. Magnified view on top set of curves/circles shown in the main panel of Fig. 3.59 (Kotliar et al., 2000) for the metal. In addition to the QMC and IPT data and to the Ginzburg-Landau fit, a cubic-root fit (dotted lines) and a square-root fit of the form $D(U) = 0.0332 + 0.0488\,(2.39695 - U)^{1/2}$ (dashed lines) to the asymptotic behavior of the metallic IPT solution is shown. Interactions are in units of the half bandwidth.

latter is governed by an exponent of 1/2, at least within IPT.[52]

Given the fact that the misfit from the correct asymptotic behavior was hard to catch even for IPT data which has no statistical error and even very close to the critical end point, we may expect that critical behavior is practically undetectable using QMC at temperatures that deviate by a few percent (or more) from the critical temperature T^* or when using a grid size of more than fractions of a percent in U. This is illustrated in Fig. 3.63 where the QMC data (symbols) presented by Kotliar et al. (2000) is reanalyzed using regular fit functions (upper lines) similar to those used in subsection 3.5.5. The bottom line shown for $U \geq 2.3$ represents our result (3.19) for the insulator (rescaled to units of the half bandwidth). The slight systematic deviation of the QMC data in the insulating phase (for $U \geq 2.4$) from this curve probably reflects a finite $\Delta\tau$ error. The overall agreement between QMC data for the metallic phase and our fit functions is very good. For $T = 1/40$, below the critical temperature, it is even much better than the agreement between QMC and either the (rescaled) IPT result or the GL fit. Only the coexistence point belonging

[52]In contrast, the IPT result for the (interacting) density of states at the Fermi level shown in Fig. 3.59 b is well described by an exponent 1/3 when T is varied at constant $U = U^*_{\mathrm{IPT}}$, both on the metallic and insulating side (with different prefactors).