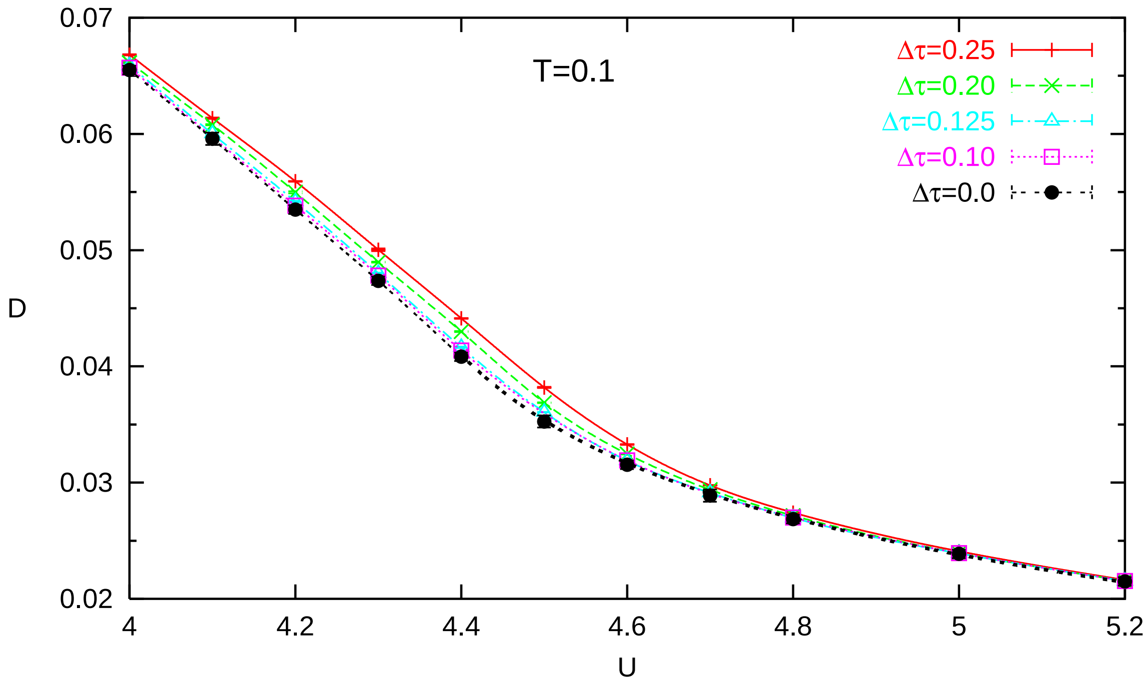

Figure 3.35: Double occupancy for $T = 1/10$. Filled circles indicate the results of purely quadratic $\Delta\tau \to 0$ extrapolations of the QMC data (open symbols). Thin lines are guides to the eye only. The thick portion of the double-dashed line for $\Delta\tau = 0$ (and $U \geq 4.4$) follows the universal expression (3.19) for the insulator.

temperature, no fits for the metallic-like region were attempted in Fig. 3.35. In this figure, all thin lines are guides to the eye only. The data labeled as $\Delta\tau = 0.0$ (solid circles) was obtained by quadratic extrapolation. The thick black line visible for $U > 4.4$ represents our universal fit (3.19) for the double occupancy in the insulator. The maximum slope of $D(U)$ for $U \approx 4.4$ supports our earlier estimate $U_{c2b} = 4.4$ for the center of the crossover region at this temperature.

In Fig. 3.36, the almost abrupt change of slopes for $D(U)$ indicates the proximity to a sharp transition for $T = 0.067$. Here and in all following plots, the lower curve for $\Delta\tau = 0.0$ is given by the temperature-independent fit (3.19) for the insulator. The curves for the metallic region are parameterized in terms of their difference with respect to the expression (3.19) for the double occupancy in the insulating phase:

$$D_{\mathrm{m}}(T, U, \Delta\tau) = D_i(U) + A_{T,\Delta\tau} \frac{U_{c2b}(T, \Delta\tau) - U}{1 + B_{T,\Delta\tau}(U_{c2b}(T, \Delta\tau) - U)} \,. \tag{3.20}$$

In particular, the differences vanish for $U = U_{c2b}(T, \Delta\tau)$ so that at these points not only the (extrapolated) fits for the energy of metal and insulator, but also the fits for the double occupancy of both phases coincide. Consequently, the ratio of the differences of both pairs of observables $\Delta E/\Delta D$ remains finite within (and beyond) the coexistence region which will prove useful later. The initial slope and curvature of ΔD at $U = U_{c2b}$ is controlled by the two free parameters (per curve), $A_{T,\Delta\tau}$ and