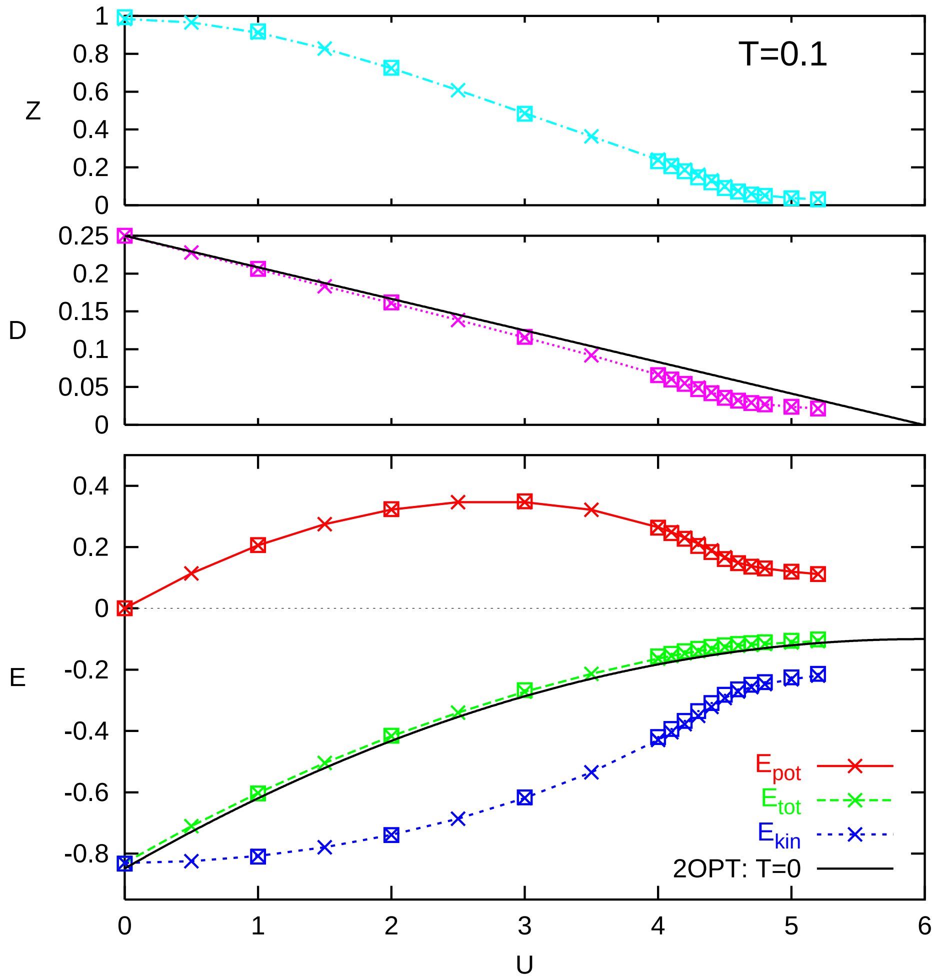

Figure 3.6: Quasiparticle weight Z (Eliashberg estimate), double occupancy D, and energy contributions for $T = 0.1$. Crosses (connected with lines) denote QMC results for $\Delta\tau = 0.2$, squares are for $\Delta\tau = 0.125$. For comparison, results of second order perturbation theory (2OPT) are shown for the total energy and the double occupancy for $T = 0$ (solid black lines).

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one usually associates the disappearance of the quasiparticle peak with $Z \approx 0$. Z in the definition (3.5), however, is not positive near a metal-insulator transition so that its interpretation as a quasiparticle weight breaks down. In contrast, the discrete version (3.6) always leads to positive $\mathcal{Z}$ and may therefore appear more physical. In any case, Z loses its theoretical foundation outside the Fermi liquid phase where it remains only a heuristic indicator of a metal-insulator transition. In the uppermost part of Fig. 3.6, Z is shown for the relatively high temperature $T = 0.1$. A rapid change of slopes indicates a transition or crossover near $U \approx 4.7$.

Within the DMFT, the energy per lattice site is given as (Fetter and Walecka,