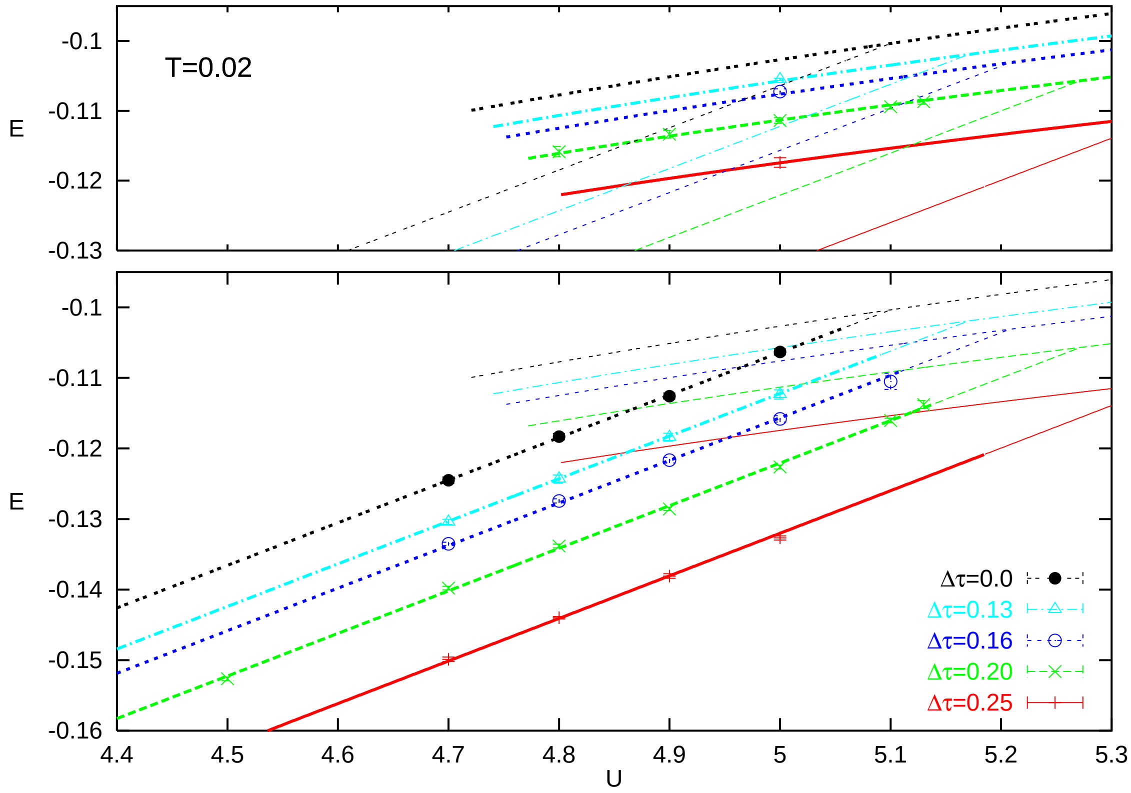

Figure 3.28: Total energy for $T = 1/50$, analogous to Fig. 3.24.

Figure 3.27 shows results for $T = 0.025$ and includes data (for $\Delta\tau = 0.1$) with $L = 400$ time slices which was the maximum used in this study and is significantly larger than values previously reported in the literature. Again, the agreement with the fit curves is seen to be very good. Note that U_{c1}, the stability edge for the insulator, agrees with the estimate obtained for $T = 1/32$. In contrast, lowering T significantly reduces the energy of the metallic phase as the specific heat is then very significant. Therefore, U_{c2}, the stability edge of the metal, and U_{c2b}, the point where the extrapolated energies of metallic and insulating phases cross, further increase upon lowering T.

These trends continue for $T = 1/50$ as seen in Fig. 3.28. At this temperature, no simulations can be performed at $\Delta\tau = 0.1$; instead the maximal number of time slices is limited[27] to $\Lambda = 400$ leading to $\Delta\tau \geq 0.125 \approx 0.13$. Since the temperature-independence of the energy in the insulating phase has already been established in subsection 3.5.2, the number of data points in this phase is kept to a minimum and the numerical effort is concentrated instead on the metallic phase within the coexistence

[27]Note that the scaling of the computational effort as Λ^3 established in Sec. 1.3 is only valid for supercomputers where the memory system works at cpu speed. For regular workstations, the scaling at large Λ is closer to Λ^4 so that the computational cost for $\Lambda = 400$ is already more than two orders of magnitude higher than for $\Lambda = 100$, e.g., for $\Delta\tau = 0.1$ at $T = 0.1$. See also subsection 1.3.2.