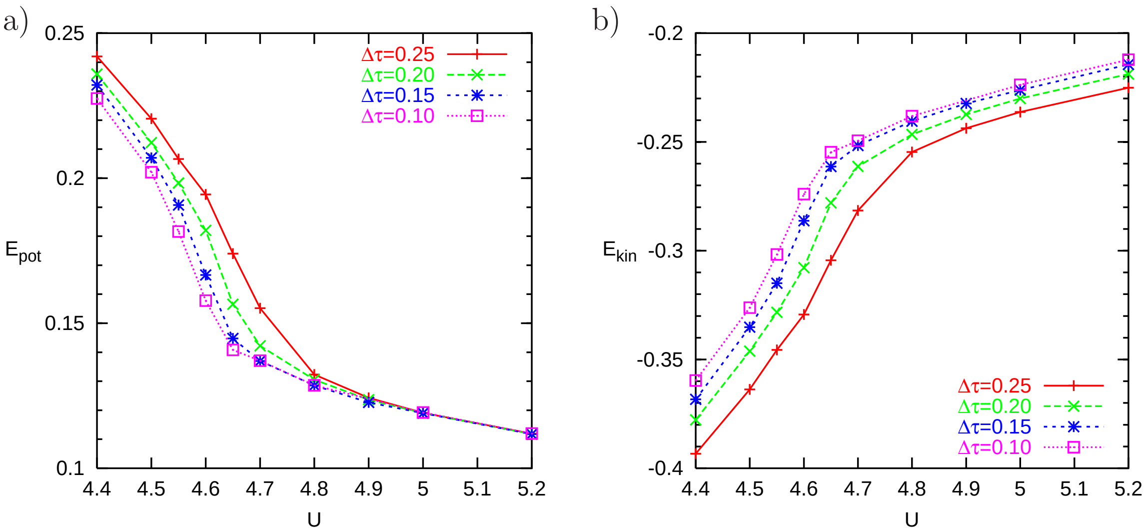

Figure 3.17: a) Potential energy, **b)** kinetic energy for $T = 1/15$. Lines are guides to the eye.

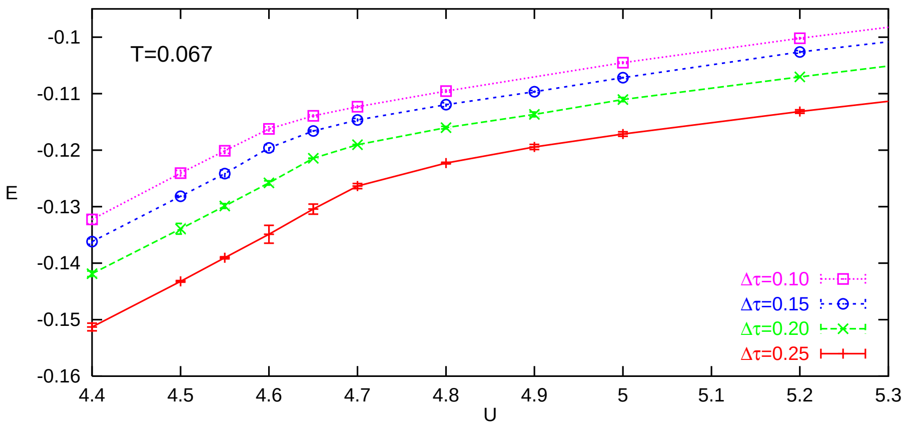

Figure 3.18: Total internal energy for $T = 1/15$. Lines are guides to the eye only. The kink extrapolating to $U \approx 4.6$ for $\Delta\tau \to 0$ indicates a transition or narrow crossover region.

kinetic energy shows a more pronounced kink near $U \approx 4.6$, in particular for small $\Delta\tau$. The $\Delta\tau$ error is still maximal in this region, but significant for all values of U. Since the $\Delta\tau$ dependence has opposite signs for E_{pot} and E_{kin}, the total internal energy $E = E_{\text{pot}} + E_{\text{kin}}$ will have a *smaller* $\Delta\tau$ error than its constituents. Note also that the curvature has opposite sign for E_{pot} and E_{kin}, both in the metallic and in the insulating region. Thus, some cancellation will occur so that $E(U)$ is also less curved than its constituents which may help in pinpointing a transition point.

This is indeed seen in Fig. 3.18. For each value of $\Delta\tau$, $E(U)$ is linear within (statistical) error bars on the metallic side up to some transition point which decreases from roughly $U \approx 4.7$ for $\Delta\tau = 0.25$ to $U \approx 4.6$ for $\Delta\tau = 0.1$. On the insulating side,