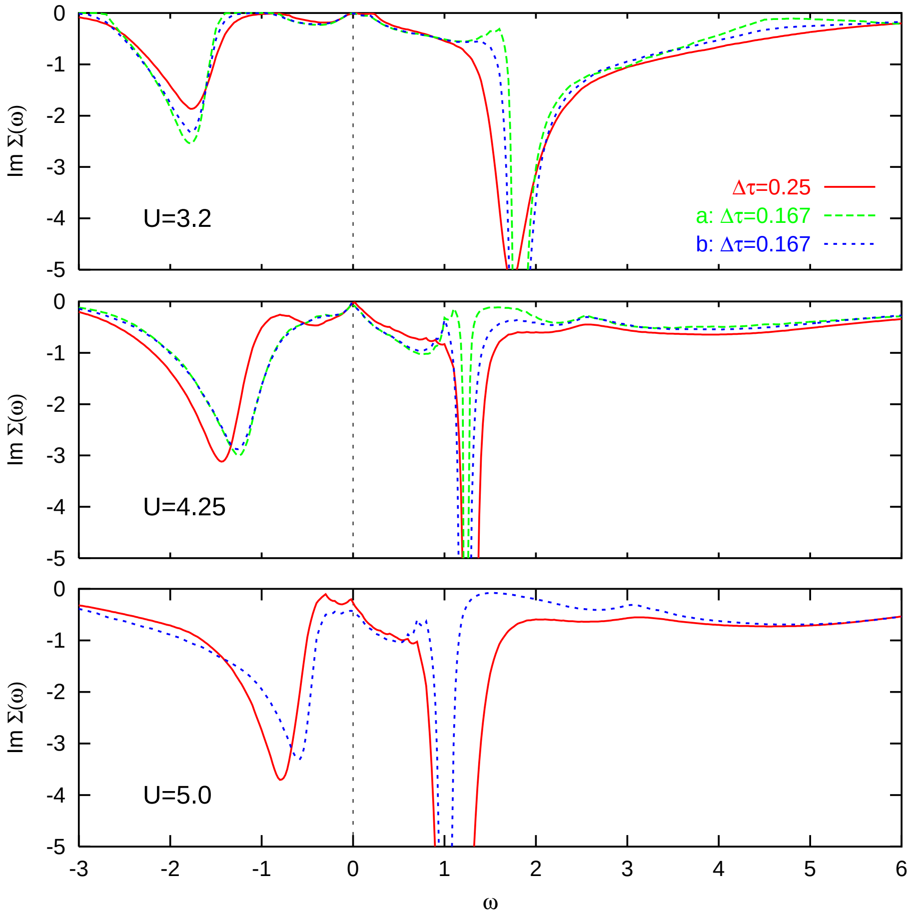

Figure 5.16: Imaginary part of the self-energy on the real axis computed from the MEM spectra shown in Fig. 5.12. The variations "a" and "b" of the MEM scheme are explained in the discussion of Fig. 5.12.

Significant changes are found in the results for $\Sigma(\omega)$ as shown in Fig. 5.16 when the discretization is reduced from $\Delta\tau = 0.25$ to $\Delta\tau = 0.167$. In particular, the shapes of $\Sigma(\omega)$ near the Fermi energy come closer to the expected quadratic form for the more accurate data corresponding to $\Delta\tau = 0.167$. In comparison, differences observed from variations of the MEM scheme ("a" and "b") are small except near singularities where the precise value of Σ is less important.[28]

The corresponding estimates for $\sigma(\omega)$ are presented in Fig. 5.17 on a semilogarithmic scale, using the lattice input $\tilde{\rho}(\epsilon)$ from Fig. 5.15 b. Evidently, the $\Delta\tau$ effects are important quantitatively; in particular, peak positions shift and the Drude peak decreases for $\Delta\tau = 0.167$ (and $U \geq 4.25$). Thus, correlation effects are treated more adequately at lower $\Delta\tau$.

Figure 5.18, the main result of this subsection, shows our best estimate for the

[28]For $U = 5.0$, no reliable causal solution $\Sigma(\omega)$ was found using the spectrum obtained in MEM scheme "a" due to numerical errors.