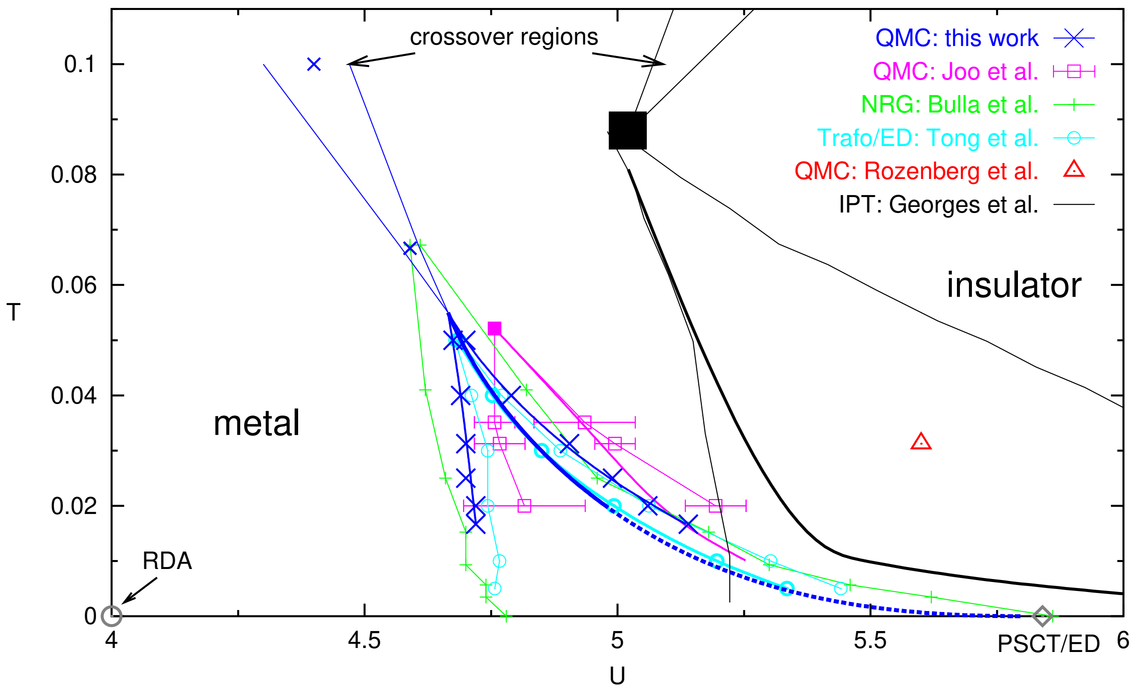

Figure 3.54: MIT phase diagram: recent finite-temperature results [this work, Joo and Oudovenko (2001), Bulla et al. (2001), Tong et al. (2001)] in comparison with former estimates [Rozenberg et al. (1994), Georges et al. (1996)]. In the low-temperature region, thinner lines represent U_{c1} and U_{c2}. Thick lines show calculated first-order lines $U_c(T)$ [this work, Tong et al., Georges et al.] with the exception of Joo et al.'s estimate [with $U_c(T) \approx U_{c2}(T)$ for $T \lesssim T^*$] which is based on a rescaling of the IPT curve and a fit to ground state data. For ground state data, see Table 3.1; subsets of the finite-T data are shown in Fig. 3.7 b, Fig. 3.9, Fig. 3.32 b, Fig. 3.33, Fig. 3.50, and Fig. 3.52. For Rozenberg et al.'s (1999) QMC results on coexisting phases (not shown here), see Fig. 3.32 a and Fig. 3.33.

since Tong et al.'s method is approximate (see above), our final curve shown in Fig. 3.54 is still the only controlled (and even numerically exact) result. In fact, both the original (cf. Fig. 3.7 a) and the later IPT estimates wrongly implied that $U_c(T) \approx U_{c1}(T)$ for $T \lesssim T^*$. The implication of Joo et al.'s fitting and scaling procedure that $U_c(T) \approx U_{c2}(T)$ for $T \lesssim T^*$ is closer to the truth, but still qualitatively incorrect. Only the recent independent results of this work and by Tong et al. provide significant insight with regard to the position of $U_c(T)$.

3.6.4 Implications of Partial Frustration

After having established the MIT scenario in the fully frustrated case (for semi-elliptic DOS), the interesting question arises what the full phase diagram would look like for partial frustration. In this context, we have to distinguish between frustration at constant DOS and the more generic case that the introduction of frustrating bonds