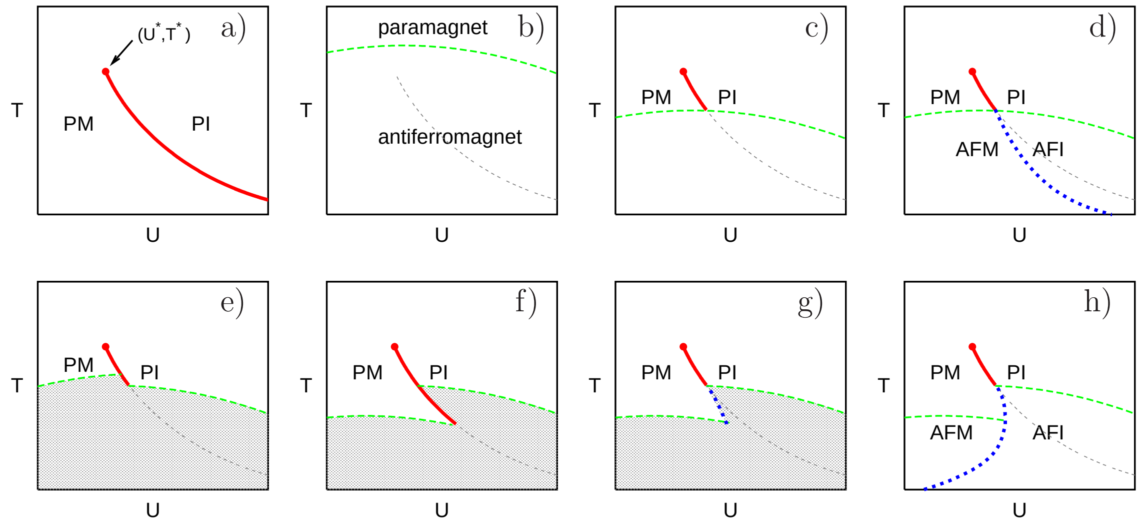

Figure 3.55: Schematic phase diagrams of models with semi-elliptic DOS and varying degrees of frustration. **a)** fully frustrated case with first-order paramagnetic MIT (thick solid line) for $0 \leq T < T^*$. **b)** weakly frustrated case with second-order magnetic transition (dashed line); no transitions within paramagnetic or within AF phase. **c)-h)**: stronger frustrated case with $T_N^{\max} < T^*$. **c)** first-order line ends on smooth Néel curve. **d)** first-order MIT crosses smooth Néel curve. **e)** $T_{\rm N}$ higher on metallic side of MIT line; no implications for AF phase (shaded) intended. **f)** $T_{\rm N}$ higher on insulating side of MIT line. **g)** $T_{\rm N}$ higher on insulating side of MIT line; MIT line shifted in intermediate temperature region. **h)** speculative scenario for full phase diagram: a single first-order MIT line extends from (U^*, T^*) to $(0,0)$; it agrees with the fully-frustrated line at large T (solid line) and deviates below (thick short-dashed line). For the partially frustrated model, only scenarios **b)** and **g)** (with the possible completion **h)**) appear likely (see text). The MIT line of the fully frustrated model is drawn as faint thin line for comparison where it is does not represent a transition.

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also leads to an asymmetry of the DOS.

Frustration at constant semi-elliptic DOS

Within the DMFT, the lattice influences properties of homogeneous phases only via its (noninteracting) DOS. Thus, the thermodynamics of a partially frustrated model with semi-elliptic DOS agrees with that of the fully frustrated model considered so far within its paramagnetic phase.[45] In the following, we will derive the qualitative characteristics of the full phase diagram expected for such a model. For sufficiently small frustration, the first-order MIT line present in the fully frustrated model (Fig. 3.55 a) is completely hidden by the low-temperature AF phase; then, the phase diagram is qualitatively unchanged from the unfrustrated case as shown in Fig. 3.55 b. For

[45]While the claim (Rozenberg et al., 1995) that uniform NNN hopping on the Bethe lattice leaves the DOS unchanged was contradicted in subsection 2.2.2, fully disordered hopping on the NNN bonds of a Bethe lattice constitutes a realization of such a model with variable disorder.