Twisted mass QCD at finite temperature

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We discuss the use of Wilson fermions with twisted mass for simulations of QCD thermodynamics. As a prerequisite for a future analysis of the finite temperature transition making use of automatic O(a) improvement we investigate the phase structure in the space spanned by the hopping parameter $\kappa$, the inverse coupling $\beta$, and the twisted mass parameter $\mu$. We present results for $N_f = 2$ degenerate quarks on a $16^3 \times 8$ lattice, for which we have studied the extension of the Aoki phase at strong coupling and vanishing $\mu$, as well as the thermal transition line at moderate gauge couplings and a non-vanishing $\mu$. 