Karsch: Recent Lattice Results

Lattice gives us singlet free energy, F_1

Potential in Schrodinger equation, V_1, related to F_1 by

$$V_1(r,T) \equiv -T^2 \frac{\partial F_1(r,T)}{T\partial T}$$

so that

$$\left[2m_a + \frac{1}{m_a}\nabla^2 + V_1(r,T)\right]\Phi_i^a = M_i^a(T)\Phi_i^a$$

$a$is charm or bottom

T dependent potential mimics in-medium modification of $q\overline{q}$ interaction

Recent analyses use both F_1 (Digal *et al.*) and V_1 (Wong)

V_1 gives dissociation temperatures, T_d, consistent with spectral function analyses

State	J/ψ	χ_c	ψ'	Υ	χ_b	Υ'	χ_b'	Υ''
E_i^a (GeV)	0.64	0.20	0.05	1.10	0.67	0.54	0.31	0.20
T_d/T_c	1.1	0.74	0.1 - 0.2	2.31	1.13	1.1	0.83	0.74
T_d/T_c	~ 2.0	~ 1.1	~ 1.1	~ 4.5	~ 2.0	~ 2.0	$-$	$-$

Table 1: Comparison of results using lattice potentials based on F_1 and V_1.