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## Funny business from the large $N_c$ finite temperature crossover

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It's well known that the deconfinement transition temperature for  $SU(N_c)$  gauge theory is almost independent of  $N_c$ , and the transition is first order for  $N_c \geq 3$ . In the real world ( $N_c = 3$ , light quarks) it is a crossover located far away from the pure gauge value. What happens if you keep the number of fermion flavors fixed ( $N_f = 2$ ) and vary the fermion mass and  $N_c$ ? There are multiple plausible stories, only one of which appears to be true when the systems are simulated on the lattice. There might be consequences for other simple stories people tell about confinement, chiral symmetry breaking, and the quark model.

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