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The QCD deconfinement critical point as a function of N_t with N_f=2 flavours of unimproved Wilson fermions

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QCD at zero baryon density in the limit of infinite quark mass undergoes a first order deconfinement phase transition at a critical temperature T_c corresponding to the breaking of the global centre symmetry.
In the presence of dynamical quarks the global centre symmetry is explicitly broken. Lowering the quark mass the first order phase transition weakens and terminates in a second order Z(2) point. Beyond this line confined and deconfined regions are analytically connected by a crossover transition.
As the continuum limit is approached (i.e. the lattice spacing is decreased) the region of first order transitions expands towards lower masses. We study the deconfinement critical point with standard Wilson fermions and N_f=2 flavours. Therefore we simulate several kappa values on N_t=8 and various aspect ratios in order to extrapolate to the thermodynamic limit, applying finite size scaling. We estimate if and when a continuuum extrapolation is possible.

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