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## The deconfinement transition in 2+1 dimensional SU(3) from twisted boundary conditions and self-duality

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We study the pure SU(3) lattice gauge theory in 2+1 dimensions using 't Hooft's twisted boundary conditions to force non-vanishing center flux through the finite box. In this way we measure the free energy of spacelike center vortices as an order parameter for the deconfinement transition. The transition is of second order and by the Svetitsky-Jaffe conjecture it falls into the universality class of the 2d 3-state Potts model. Of particular importance for us is the self-duality of the 2d  $q$ -state Potts models which can be generalized to hold in a finite volume for any  $q$ . We verify the corresponding self-duality for SU(3) and exploit it to extract critical couplings with high precision from numerical simulations in rather small volumes. We furthermore obtain estimates for critical exponents and the critical temperature in units of the dimensionful continuum coupling. Finally we present preliminary results from applying the same methods to the SU(4) gauge theory in 2+1 dimensions.

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talk

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