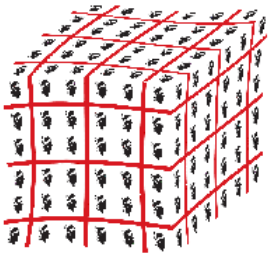

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Critical behavior of the compact 3D U(1) gauge theory at finite temperature

Tuesday, 15 June 2010 18:00 (5 minutes)

Critical properties of the compact three-dimensional U(1) lattice gauge theory are explored at finite temperatures. The critical point of the deconfinement phase transition, critical indices and the string tension are studied numerically on lattices with temporal extension Nt = 8 and spatial extension ranging from L = 32 to 256. The critical indices, which govern the behaviour across the deconfinement phase
transition, are generally expected to coincide with the critical indices of the two-dimensional XY model. It is found that the determination of the infinite volume critical point differs from the pseudo-critical coupling at L = 32, found earlier in the literature and implicitly assumed as the onset value of the deconfined phase. The critical index nu computed from the scaling of the pseudocritical couplings agrees well with the value nu = 1/2 of the XY model. The computation of the index eta brings to a value larger than expected. The possible reasons for such behaviour are discussed.

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