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The confining string in 3D $U(1)$ gauge theory beyond effective string theory

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The confining string in non-Abelian gauge theories is described to high precision by effective string theory. On the other hand, $U(1)$ gauge theory in three dimensions, while confining, displays some peculiar properties which violate the assumptions of effective string theory. In particular, it is not possible to hold both the mass and string tension fixed in the continuum limit. We report results of high precision numerical simulations of this theory, in particular the ground state energy of closed strings. We show that effective string theory only applies for small bare coupling (far from the continuum). Instead, for large bare coupling (close to the continuum) we find agreement with a very recent theoretical prediction by Aharony, Barel & Sheaffer.

Parallel Session (for talks only)

Vacuum structure and confinement

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