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N=2* Super Yang-Mills on a Lattice (Anosh Joseph, ICTS, Tata Institute)

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Four-dimensional N=2*super Yang-Mills theory is obtained by introducing a one parameter mass deformation to the hypermultiplet of four-dimensional N=4 Yang-Mills. Four-dimensional N=2* Yang-Mills is a non-conformal gauge theory and its gravitational dual has been constructed by Pilch and Warner. The theory exhibits many interesting properties at finite temperature. We formulate N=2* super Yang-Mills on a Euclidean spacetime lattice using the method of topological twisting. The lattice formulation is local, gauge invariant, doubler free and preserves one supersymmetry charge at finite lattice spacing. Such a construction can be used for finite temperature nonperturbative explorations of the theory and test the gauge-gravity duality conjecture in a non-conformal theory.

Summary