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D=5 Maximally Supersymmetric Yang-Mills on the Lattice

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Maximally supersymmetric Yang-Mills theory in five dimensions has generated a lot of interest in the recent years. It takes part in the gauge-gravity duality and its finite temperature properties have been investigated recently in the planar limit. This theory is also interesting through its conjectured relationship to the six-dimensional (2,0) theory, which is still controversial. In this talk we describe the lattice construction of D=5 maximally supersymmetric Yang-Mills theory. The lattice theory preserves one supercharge exact at finite lattice spacing. This supersymmetric lattice formulation can be used to explore the non-perturbative regime of the continuum target theory. It would be interesting to find a nontrivial UV fixed point from the lattice theory for D=5 theory since the fixed point can provide a UV completion and non-perturbative definition of the theory.

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