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The continuum limit of lattice N=4 super-Yang-Mills

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We know from previous studies that the symetries of the twisted Q-symmetric lattice theory are particularly powerful in terms of protecting the long distance effective theory from unwanted renormalizations. Here, it will be shown that rescalings of the lattice fields imply that only two fine-tunings are required, so that the N=4 theory is on a similar footing to clover fermions in lattice QCD. We also provide a blocking scheme that preserves the symmetries. We discuss this in relation to our recent result that restoring any of the discrete R symmetries is sufficient to obtain the correct continuum limit. An early numerical study of this issue is discussed. We conclude with prospects for a Monte Carlo renormalization group involving our blocking scheme.

Primary author: GIEDT, Joel (Rensselaer Polytechnic Institute)

Co-author: CATTERALL, Simon (Syracuse University)

Presenter: GIEDT, Joel (Rensselaer Polytechnic Institute)

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