

RG decimation study of $SU(2)$ gauge theory.

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Abstract: We report on numerical studies of RG decimations in $SU(2)$ gauge theory. We study in particular a class of plaquette actions involving sums of group representations. We measure a number of observables representative of different length scales in order to investigate the transformation of the system under different choices of spin blocking, and examine the flow of the effective action couplings. The microcanonical demon's ability to reconstruct a local effective action from plaquette measurements is investigated and found not to correctly represent the long range physics under decimations. Better schemes, such as those based on analytical bounds on the coupling flows are also discussed. A picture of the gluonic vacuum at successive length scales is one goal of such studies.