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Baryon bag simulation of QCD in the strong coupling limit

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We explore the possibility of a simulation of strong coupling QCD in terms of baryon bags. Since the gauge action is missing in the strong coupling partition sum, the integration over the gauge group is possible and the remaining Grassmann integral can be mapped to a statistical system of monomers, dimers and loops. Rather recently it was shown that the contributions from the baryons, i.e., the tri-quark monomers, dimers and loops, can be collected in so-called baryon bags. Within the bags the baryons propagate freely whereas the rest of the lattice is solely filled with interacting meson terms, i.e., quark and di-quark monomers and dimers. We perform a simulation directly in the baryon bag language and show first results in two dimensions.

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