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# Gauge-invariant signature of spontaneous gauge symmetry breaking by the Hosotani mechanism

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We study the Hosotani mechanism on the lattice and show with the use of gauge invariant observables that SU(3) can break either to SU(2)xU(1) or U(1)xU(1). The novelty in this study is the strict gauge invariance of the observables used.
We take advantage of the inability of a U(1) flux to decay in the continuum limit. One interesting consequence is that the SU(2) and U(1) subgroups rotate locally in representations space but the introduced flux always follows the U(1) subgroup. We also investigate the stability of U(1) monopoles when the gauge symmetry is broken.

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