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## Localization of Dirac modes in the finite temperature $SU(2)$ -Higgs model

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Low-lying Dirac modes become localized at the finite-temperature transition in QCD and other gauge theories, indicating a connection between localization and deconfinement. This phenomenon can be understood through the “sea/islands” picture: in the deconfined phase, modes become trapped on “islands” of Polyakov loop fluctuations within a “sea” of ordered Polyakov loops.

To test the universality of the “sea/islands” mechanism, we investigate whether changes in the localization properties of low modes occur across other thermal transitions where the Polyakov loop becomes ordered, beyond the usual deconfinement transition. The fixed-length  $SU(2)$ -Higgs model is appropriate for this study. After mapping out the phase diagram, we find that low Dirac modes become localized in the deconfined and Higgs phases, where the Polyakov loop is ordered. However, localization is absent in the confined phase. These findings confirm the “sea/islands” picture.

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