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The behavior of Topological objects above the chiral crossover transition in QCD

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We compare the behavior of the analytic instanton-dyon solutions to zero and near-zero-modes of the overlap Dirac operator measured on the finite temperature 2+1 flavor lattice QCD configurations, generated with domain wall fermion discretization. By performing numerical fit to the (near) zero-modes from lattice calculations, we extract information about the typical distance between the dyons and the background Polyakov loop they feel in the temperature range $1.0-1.2T_c$, T_c being the pseudo-critical temperature. We also show how the density of different species of dyons change as a function of temperature, and how this manifests in the eigenvalue distribution of the overlap Dirac operator.

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