

## Overlap fermion with topology conserving gauge action

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Abstract: We study the eigenvalue distributions of the Wilson-Dirac Hamiltonian  $H_W$  with the topology conserving gauge action. We find that the near-zero modes of  $H_W$  are suppressed compared to the case with standard plaquette gauge action, which could help to reduce the number of operator multiplication in the rational approximation of the overlap-Dirac operator. We also explore how much the use of the topology conserving gauge action accelerates dynamical overlap fermion simulations.