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Study of the U(1)A symmetry restoration in two-flavor QCD at finite temperature with reweighed overlap fermions

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We study the U(1)A anomaly in two-flavor lattice QCD at finite temperature using the Ginsparg-Wilson fermions.
The gauge configurations are generated with the Mobius domain-wall fermion at and above the critical temperature on 32^3x8 and 32^3x12 lattices. We apply the reweighting of the fermion determinant to that of domain-wall fermion satisfying the GW relation exactly. The results for low-lying eigenmodes are significantly different, indicating that even a small violation of the GW relation may strongly affect the low-modes. We find a strong suppression of the low-modes after the reweighting, which suggests vanishing U(1)A in the chiral limit.

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