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Discrete symmetry and 't Hooft anomalies for 3450 model

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We report our study of the discrete symmetry for lattice 3450 model
proposed by Wang and Wen. .

Lattice 3450 model is expected to describe the anomaly free chiral U(1) gauge theory in 1+1 dimension using 2+1 dimensional domain-wall fermion with gapping interactions for the mirror sector.

We find that the lattice model has exact discrete symmetry in addition to U(1) x U(1) symmetry.

Asuuming the Zumino-Stora procedure works also for discrete symmetry, we compute the full 't Hooft anomaly for the target continuum U(1) chiral gauge theory with the same discrete symmetry. We show that the mixed and self anomalies involving the discrete symmetry are absent, which is consistent with the expectation that the lattice 3450 produces chiral U(1) gauge theory in the continuum limit.

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