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Curved domain-wall fermion and its anomaly inflow

Wednesday, 2 August 2023 09:00 (20 minutes)

We report on a lattice fermion formulation with
a curved domain-wall mass term to nonperturbatively
describe fermions in a gravitational background.
In our previous work in 2022, we showed in the free
fermion theory on one and two-dimensional spherical domain-walls
that the spin connection is induced on the lattice
in a consistent way with continuum theory.
In this talk we add nontrivial $U(1)$ link variables
to the spherical domain-wall fermion systems and
study the anomaly inflow between the bulk and curved edge.
We also extend our study to a Shamir type curved domain-wall fermions.
Although one domain-wall apparently admits a single Weyl fermion
on the spherical surface, we find nontrivial obstacles
in formulating chiral gauge theory.

Topical area

Theoretical Developments

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