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A mathematical formulation of index theorem on a lattice

Thursday, 30 November 2023 16:00 (15 minutes)

We propose a mathematical formulation of the Atiyah-Singer index on a lattice. Employing a one-parameter family of the massive Wilson Dirac operator, our lattice definition of the index does not rely on chiral symmetry or Ginsparg-Wilson relation. We give a mathematical proof that at fine but finite lattice spacing, our definition converges to the index in the continuum theory. This talk is based on a work in collaboration with S. Aoki, M. Furuta, S. Matsuo, T. Onogi, S. Yamaguchi and M. Yamashita.

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