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Lattice Fermionic Casimir effect in a Slab Bag and Universality

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We apply the physically more appealing MIT Bag boundary conditions to study the Casimir effect on the lattice. Employing known formalism to calculate the Casimir energy for free lattice fermions, we show that the results for the naive, Wilson and overlap fermions match the continuum expressions precisely in the zero lattice spacing limit, as expected from universality. Furthermore, the apparent violation of the universality for naive fermions for (anti-)periodic boundary conditions noted by Ishikawa et al. is shown to be cured by applying suitable series extrapolation techniques, thus demonstrating that the Casimir energy for the naive fermions with P/AP boundary conditions agrees with the results for other free lattice fermions.

Session

Formal Theory

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