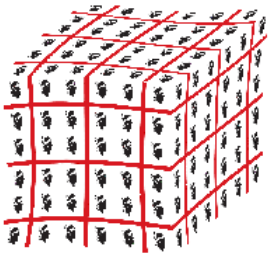

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A Ginsparg Wilson renormalisation group approach to lattice CP symmetry

Friday, 18 June 2010 17:40 (20 minutes)

Until recent work, chiral gauge theories constructed on the lattice have violated CP symmetry. This has caused difficulties in constructing, for example, the electroweak theory on the lattice ,where applying standard CP symmetry generates a non-local shift in the fermion propagator in the presence of a Higgs field. Starting from Wilson's formulation of the re-normalisation group, using a similar procedure to that originally used to derive the Ginsparg-Wilson relation, I demonstrate that CP symmetry has to be modified when applied to the lattice. Extending the recent ideas of Igarashi and Pawlowski, and building on a renormalisation group construction of the overlap formalism, I show that on the lattice one should use a modified form of CP symmetry, which solves the various anomalies in chiral gauge theories and which can be applied to the family of chiral symmetry transformations satisfied by overlap fermions. This method can be easily extended to other Ginsparg-Wilson lattice Dirac operators.

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talk

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