Lattice2010



Contribution ID: 176

Type: not specified

Fisher's zeros as boundary of RG flows in complex coupling space

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

We discuss the possibility of extending the RG flows to complex coupling spaces. We argue that the Fisher's zeros

are located at the boundary of the complex basin of attraction of IR fixed points. We support this picture with numerical calculations at finite volume for 2D O(N) models and the hierarchical Ising model using the two-lattice matching method. We present numerical evidence supporting the idea that, as the volume increases, the Fisher's zeros of 4D pure gauge SU(2) lattice gauge theory with a Wilson action, stabilize at a distance larger than 0.1 from the real axis in the complex beta= $4/g^2$ plane. We show that when a positive adjoint term is added, the zeros get closer to the real axis. We compare the situation with the U(1) case. We discuss the implications of this new framework for proofs of confinement and searches for nontrivial IR fixed points in models beyond the standard model.

Please, insert your presentation type (talk, poster)

talk

Primary author: MEURICE, Yannick Meurice (University of Iowa)

Co-authors: DENBLEYKER, Alan (U. of Iowa); VELYTSKY, Alex (BNL); BAZAVOV, Alexei (U. of Arizona); DU, Daping (U. of Iowa); ZOU, Haiyuan (U. of Iowa); LIU, Yuzhi (U. of Iowa)

Presenter: MEURICE, Yannick Meurice (University of Iowa)

Session Classification: Parallel 60: Theoretical developments

Track Classification: Theoretical developments