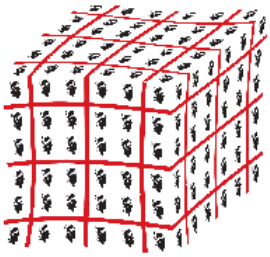

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A study of N=2 Landau-Ginzburg model by lattice simulation based on a Nicolai map

Thursday, 17 June 2010 15:50 (20 minutes)

It is conjectured that the two-dimensional N=2 Wess-Zumino model with a quasi-homogeneous superpotential provides a Landau-Ginzburg description of the N=2 superconformal minimal models. For the simplest cubic superpotential W=¥lambda ¥Phi^3 /3, it is expected that the Wess-Zumino model describes A_{2} model and the chiral superfield ¥Phi shows the conformal weight (h,¥bar{h})=(1/6,1/6) at the IR fixed point. We will examine this conjecture by a lattice simulation, extracting the weight from the finite volume scaling of the susceptibility of the scalar component in ¥Phi. We adopt a lattice model with the overlap fermion, which possesses a Nicolai map and a discrete R-symmetry. We set a¥lambda=0.3 and sample scalar configurations by solving the Nicolai map on each L ¥times L lattices, with L=18, 20, 22, 24, 26, 28, 30, 32. To solve the map, we use the Newton-Raphson algorithm with various initial configurations. About 640 configurations are analyzed on each L, and the fermion determinants are explicitly evaluated. The result is 1-h-¥bar{h}=0.660¥pm0.011, which is consistent with the conjecture.

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talk

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