Contribution ID: **213** Type: **not specified**

Weak coupling limit of 2+1 SU(2) LGT and mass gap.

Wednesday, 25 July 2018 14:20 (20 minutes)

Dual description of SU(2) lattice gauge theory in 2+1 dimensions is shown to be the theory of interacting gauge invariant 'abelian like' electric loops. The Gauss law is solved exactly to construct the Hilbert space of the gauge invariant theory using the Schwinger boson representation. This is achieved by envisaging what is called the 'splitting of a point'. Such a 'point split' lattice allows us to describe non local electric loops in terms of three independent, local, gauge invariant quantum numbers at each site satisfying triangle inequalities. The matrix elements of the Hamiltonian becomes simpler and triangle inequalities become subdominant in the weak coupling limit. The closed loop dynamics is analysed using a gauge invariant phase space path integral. In the weak coupling limit, the mean gauge invariant electric flux becomes large and small spatial electric flux loops dominate in the vacuum state leading to a mass gap.

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Session Classification: Theoretical Developments

Track Classification: Theoretical Developments