

Exact solution of the Polyakov loop models in the large-N limit

Wednesday, 13 December 2017 17:00 (20 minutes)

A dual formulation of $U(N)$ and $SU(N)$ Polyakov loop models is constructed for all N and in any number of dimensions. The construction is based on the theory of the Weingarten functions. In the case of a complex external field a sufficient condition for the dual Boltzmann weight to be positive is derived. As an application of the dual formulation we report on the exact solution of $U(N)$ models in the large- N limit. Also, we calculate the first correction to the large- N limit for $SU(N)$ models.

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Session Classification: Session 4