

INTEGRAL REPRESENTATIONS FOR THE SELF-AVOIDING WALK

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The self-avoiding walk is a fundamental model in probability, combinatorics and statistical mechanics, for which many of the basic mathematical problems remain unsolved. Recent and ongoing progress for the four-dimensional self-avoiding walk has been based on a renormalization group analysis. This analysis takes as its starting point an exact representation of the self-avoiding walk problem as an equivalent problem for a perturbation of a Gaussian integral involving anti-commuting variables (fermions). This lecture will give a self-contained introduction to fermionic Gaussian integrals and will explain how they can be used to represent self-avoiding walks.